SANYO

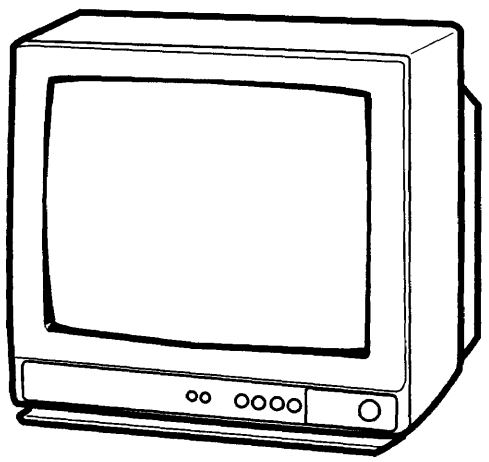
Colour Television Service Manual CB1443

Model No. C14EA80⁻

Service Ref. No. C14EA80

PRODUCT CODE
1113 183 02(C14EA80B)

ORIGINAL VERSION
Chassis No. EC2-A 14



Give complete "SERVICE REF. NO." for parts order or servicing , it is shown on the rating sheet on the cabinet back of the TV set.

Note:
This TV receiver will not work properly in foreign countries where the television transmission system and power source differ from the design specifications.
Refer to the specifications for the design specifications.

SPECIFICATIONS

Power source	AC 220~240V 50Hz
Television system	System I
Colour system	PAL
Receiving channel	UHF 21~69
Aerial input impedance	75ohm
AV terminal	
21 Pin socket	CENELEC standard
Sound output	2 watts
Picture tube	37cm diagonal, 90 degree
(Visible picture diagonal)	34cm
Dimensions	370(W) X 331(H) X 381.5(D)mm
Weight	9.0 Kg

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SAFETY PRECAUTION

1: An isolation transformer should be connected in the power line between the receiver and the AC line when a service is performed on the primary of the converter transformer of the set.

2: Comply with all caution and safety-related notes provided on the cabinet back, inside the cabinet, on the chassis or the picture tube.

3: When replacing a chassis in the cabinet, always be certain that all the protective devices are installed properly, such as, control knobs, adjustment covers or shields, barriers, isolation resistor-capacitor networks etc.

Before returning any television to the customer, the service technician must be sure that it is completely safe to operate without danger of electrical shock.

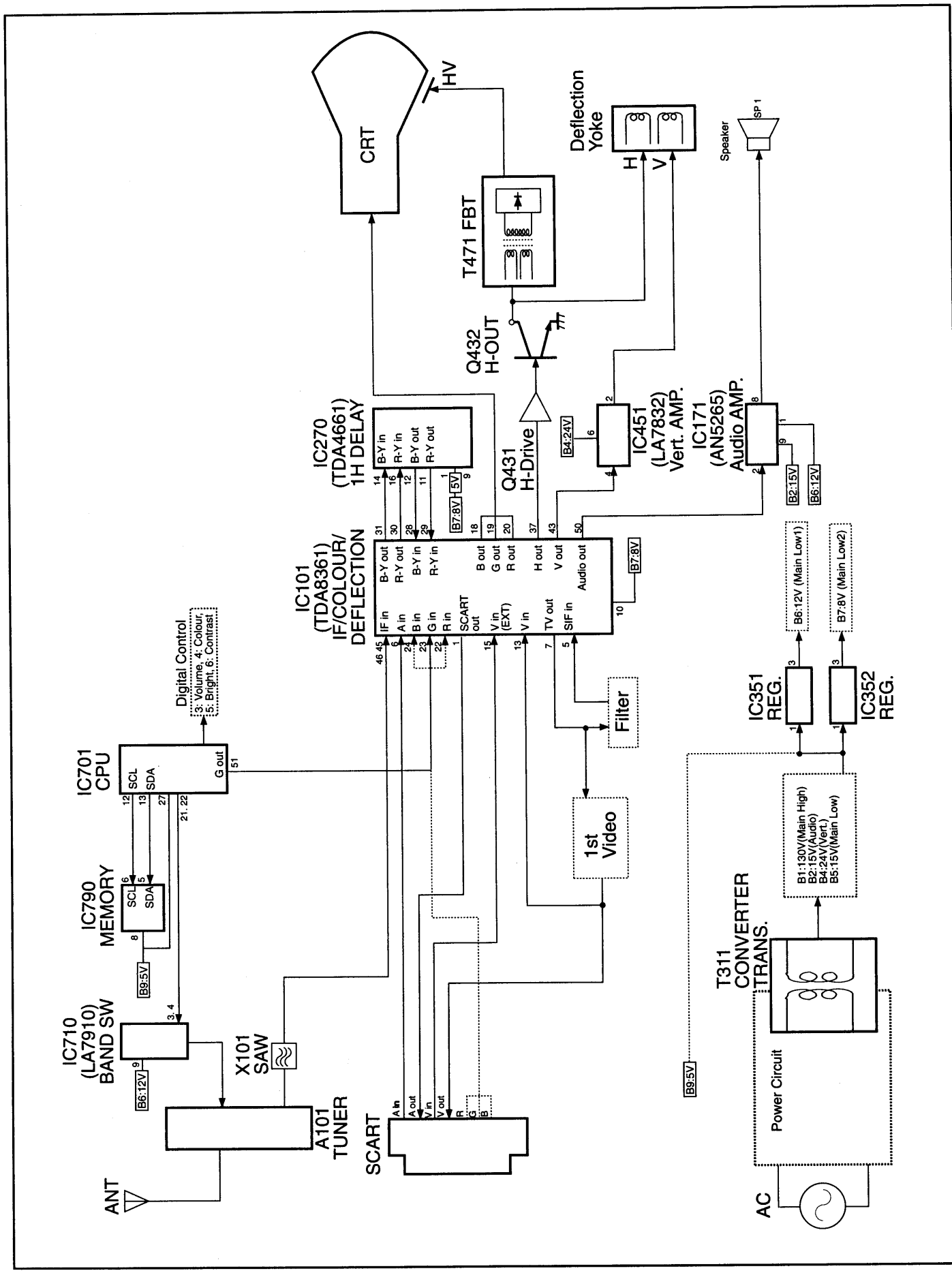
The primary source of X-RADIATION in the television receiver is the picture tube. The picture tube is specially constructed to limit X-RADIATION emissions. For continued X-RADIATION protection, the replacement tube must be the same type as the original including suffix letter. Excessive high voltage may produce potentially hazardous X-RADIATION. To avoid such hazards, the high voltage must be maintained within specified limit. Refer to this service manual, high voltage adjustment for specific high voltage limit. If high voltage exceeds specified limits, take necessary corrective action. Carefully follow the instructions for +B1 volt power supply adjustment, and high voltage adjustment to maintain the high voltage within the specified limits.

PRODUCT SAFETY NOTICE

Product safety should be considered when a component replacement is made in any area of a receiver. Components indicated by mark ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. It is particularly recommended that only parts designated on the parts list in this manual be used for component replacement designated by mark ⚠. No deviations from resistance wattage or voltage ratings may be made for replacement items designated by mark ⚠.

BLOCK DIAGRAM

Note: This is a general diagram for all models and therefore differs slightly from the actual block diagram.



CIRCUIT DESCRIPTION

1.POWER SUPPLY

The power supply circuit of the EC2-A chassis is composed of a rectifier smoothing circuit, an oscillation circuit, a control circuit and an output rectifier circuit. The AC input voltage is full-wave rectified by the rectifier smoothing circuit, and an unstable DC voltage is generated at both terminals of the smoothing capacitor C307. This voltage is input to the oscillation circuit. The oscillation circuit is provided with a blocking oscillator circuit that switches the switching transistor Q313 ON and OFF, and an oscillation frequency and a duty square wave pulse are generated in the input windings according to operation of the control circuit. A square-wave pulse whose size is dependent on the turn ratio of the input and output windings is obtained in the output winding. This is rectified in the output rectifier circuit, and the desired DC voltage is obtained.

2.IF & DEFLECTION (TDA8361)

The IF output signal from the tuner passes through the SAW filter, and it is input to pin45 and pin46 of IC101. The signal input to the IC passes through the IF amplifier, video detection and video amplifier circuits and is output from pin7 as a composite video signal. And after this signal is converted to impedance at Q122, supplies to the video and chroma amplifier stages. The output signal from pin7 passes through the 6.0MHz(I)/5.5MHz(B/G) trap circuit of X151, and it is input to pin5 of IC101. The signal input to the IC passes through the SIF amplifier, FM detector, external audio switch and audio output circuit, and it is then output from pin50 as audio drive signal. The sync.-separation circuit separates the video signals applied to pin13 or pin15 to vertical- and horizontal-sync. signals respectively. The horizontal oscillator requires no external components and is fully integrated. The oscillator is always running when the start-pin36 is supplied with 8V. Horizontal drive signal is output from pin37. VR401 is for adjustment of the horizontal centering. The separated vertical-sync. signal from sync. separation circuit passes through the vertical-separation circuit, and applied to trigger divider circuit. The horizontal oscillation pulse and input vertical sync. pulse are monitored by the trigger divider circuit, and switching 50Hz and 60Hz system, the vertical amplitude automatically adjusted for 50Hz and 60Hz. The output signal from the trigger divider is triggered vertical oscillation circuit consisting of C401, R402 and pin42, and vertical drive pulse is output from pin43. VR431 is for changing the amount of AC feedback applied to pin41 and for adjustment of the vertical amplitude.

3.VIDEO CHROMA & R.G.B. (TDA8361)

The composite video signal output from the pin7 of IC101 passes through Q122/Q124, and it is supplied to pin13. The external video signal output from SCART is supplied to pin15. The video signal input to pin13 or pin15 is separated to luminance (Y) signal and chroma signal in IC101. These pins are used in common with H/V-sync. separation input. The peaking of Y signal is adjusted by DC voltage of pin14. ("SHARPNESS" control) The chroma signal is divided into R-Y and B-Y chroma signals, demodulated in IC101, and output from pin30 (R-Y) and pin31 (B-Y). These chroma signals pass through the 1H delay line circuit (IC270), and they are input to pin29 (R-Y) and pin28 (B-Y). These R-Y/B-Y signals pass through RGB matrix circuit and RGB selector circuit of IC101. The internal RGB signals are generated in RGB matrix circuit and the RGB selector, consisting linear amplifiers, clamps and selects either the internal RGB signals or the external OSD signal from pin23(G). In this stage, the OSD signal which is switched by blanking signal from pin21 is superimposed into internal RGB signals.The colour gain is controlled by DC voltage of pin26. ("COLOUR" control) The contrast control voltage present at pin25, and the brightness control voltage present at pin17 controls DC level of RGB signals. The RGB signals are finally buffered before being available at the RGB output pins [pin20 (R), pin19 (G), pin18 (R)].

4.AUDIO OUTPUT(AN5265)

The audio signal output from pin50 of IC101 is input to pin2 of IC171 and passes through the pre-amplifier circuit and drive circuit, after which it is input to the audio amplifier. The audio amplifier is an SEPP (single-ended, push-pull) OTL type and output to pin8 to directly drive the speaker.

5.VERTICAL OUTPUT (LA7832)

An IC (LA7832) is used for the vertical output circuit in this chassis. The vertical drive pulse from pin43 of IC101 is input to pin4 of IC451. This pulse drives IC451, and vertical scanning is performed. In the first half of scanning a deflecting current is output from pin2 and passes through the following path:
Vcc(B4) → D451 → pin3 → pin2 → DY → C461 → VR431/R459. An electric charge is then stored in C461. In the last half of scanning the current path is C461 → DY → pin2 → pin1 → VR431/R459 → C461. In this way, an amplifying sawtooth waveform current flows directly to DY to perform electron beam defection. Next, in the first half of the banking period the vertical drive pulse suddenly becomes OFF, and in order to reduce the current flowing to DY, the current path becomes as follows by the inductance of DY:
DY → pin2 → pin1 → VR431/R459 → C461 → DY. Also, when the charge of DY has dissipated, the current path becomes Vcc24V → pin6 → pin7 → C452 → pin3 → pin2→ DY → C461 → VR431/R459, and when the prescribed current value is reached, the vertical drive pulse becomes ON. This completes one cycle.

6.HORIZONTAL OUTPUT

A horizontal oscillation signal is output from pin37 of IC101 and switches the drive transistor Q431. This switching signal is current amplified by the drive transformer T431 and drives the output transistor Q432. When Q432 becomes ON, an amplifying current flows directly to DY through C441/442 → DY → 0432 → GND,

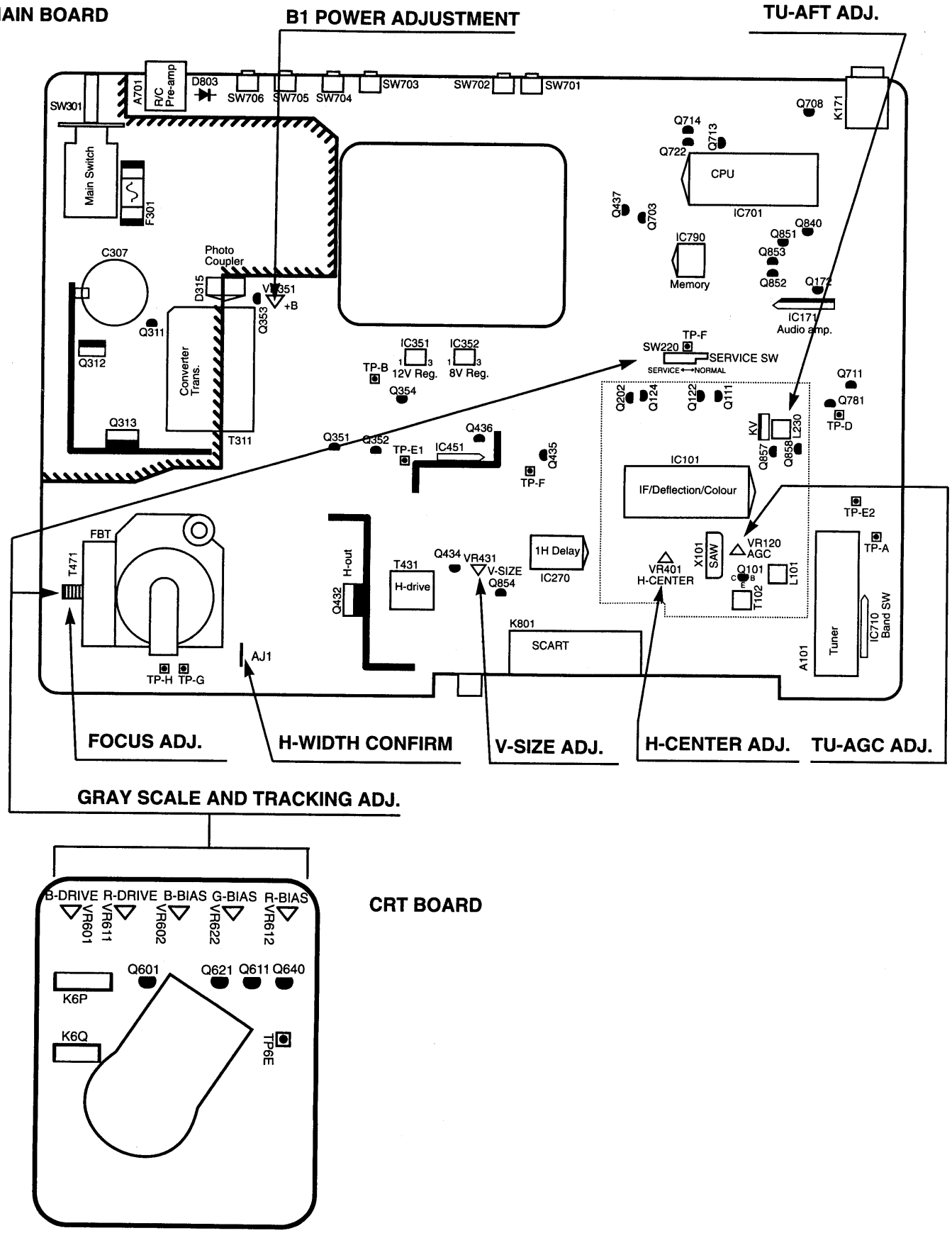
and defection is performed in the last half of the scanning period. Next, when Q432 becomes OFF, the charge that had been stored in DY up to that point releases a resonance current to the resonant capacitors C435, C444 and C445 and charges them.The current stored in C435, C444 and C445 is then flowed back to DY, and an opposite charge is then stored in DY. This opposite charge then switches the dumper diode in Q432 ON, the resonance state is completed, and an amplifying current is then flowed again directly to DY through the dumper diode. By this means, deflection in the first half of the scanning period is performed, and when Q432 becomes ON at the end of the first half of the scanning period, deflection during the last half is begun, thus completing one cycle.

7.CPU

Pin description

Pin1: H-sync. input (Horizontal pulse for OSD)
Pin2: V-sync. input (Vertical pulse for OSD)
Pin3: Volume control output (6-bit DAC)
Pin4: Colour control output (6-bit DAC)
Pin5: Brightness control output (6-bit DAC)
Pin6: Contrast control output (6-bit DAC)
Pin7/8: Not used (GND)
Pin9: TV/AV output (L:AV mode)
Pin10: AFT ON/OFF output (L:AFT ON)
Pin11: Not used (GND)
Pin12: I²C bus SCL (Serial clock for memory)
Pin13: I²C bus SDA (Serial date for memory)
Pin14: Tuning voltage output
Pin15: Ident signal input (L:No signal)
Pin16: R/C signal input
Pin17/18: Band select option input
Pin19: Not used (Open)
Pin20: SCART auto switch input (L:VCR Play)
Pin21/22: Band selector output
Pin23: Supply Ground
Pin24: Oscillator input for CPU
Pin25: Oscillator output for CPU
Pin26: Supply Ground
Pin27: Power supply(+5V)
Pin28: Oscillator output for OSD
Pin29: Oscillator input for OSD
Pin30: Reset input
Pin31: Protect signal input (L:Power circuit defects)
Pin32: Sync. ID signal input
Pin33: AFT signal input
Pin34: Keyboard scan 2
Pin35: Keyboard scan 1
Pin36~45: Not used (GND)
Pin46: Not used
Pin47: Mute output in no picture(FTZ mute)
Pin48: Power ON/OFF output (H:ON)
Pin49: Blanking output for OSD
Pin50: Not used (Open)
Pin51: Green output for OSD
Pin52: Not used (Open)

INSTALLATION AND SERVICE ADJUSTMENT



SERVICE CONTROL ADJUSTMENT

B1 POWER SUPPLY ADJUSTMENT

1. Set VR351 to be mechanical center before pressing the main switch.
2. Tune the receiver to PAL circular pattern.
3. Set brightness and contrast controls to normal.
4. Connect digital V-meter to R351.
5. By using VR351, adjust voltage to 130 ± 0.5 V.

TU-AFT ADJUSTMENT

1. Tune the receiver to the clearest station.
2. By using L230, adjust AFT to obtain the best picture.

AGC ADJUSTMENT

NOTE: ***Do not attempt this adjustment with weak signal.***

1. Tune the receiver to the clearest station.
2. Set AGC VR(VR120) in direction which causes snow noise to appear, then in the opposite direction until snow noise just disappears.

GREY SCALE ADJUSTMENT

[SCREEN VR ADJUSTMENT]

1. Tune the receiver to black and white pattern.
2. Set brightness control to display centre and contrast control to normal.
3. Set SW220 to "SERVICE" position.
4. Set VR601and VR611 to be mechanical center.
5. Turn VR602, VR612 and VR622 fully counter-clockwise.
6. Set screen VR for one colour to be just visible.

[BIAS VR ADJUSTMENT]

7. By using VR602, VR612 or VR622, adjust line to be white.
8. Set SW220 to "NORMAL" position.

[DRIVE VR ADJUSTMENT]

9. By using VR601 and VR611, adjust white balance.

HIGH VOLTAGE & WIDTH CONFIRM

[HIGH VOLTAGE CONFIRM]

1. Tune the receiver to PAL circular pattern.
2. Set brightness and contrast controls to normal.
3. Connect digital V-meter to test point (+) "TP-H" and (-) "TP-G", and high voltage meter to CRT anode.
4. Confirm high voltage to be 21.0 ± 1 KV at beam current 0.7 ± 0.05, and less than 25.0 KV at 0 beam current.

[H-WIDTH CONFIRM]

5. If H-width is too wide or narrow, connect or disconnect AJ1.
6. Reconfirm high voltage.

H-CENTER ADJUSTMENT

1. Tune the receiver to PAL circular pattern.
2. Adjust H-center by using VR401.

V-SIZE ADJUSTMENT

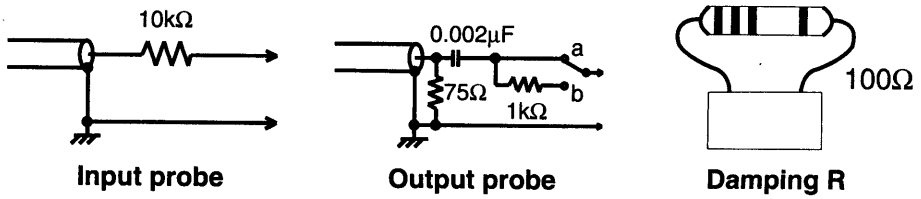
1. Tune the receiver to PAL circular pattern.
2. Adjust V-size by using VR431.

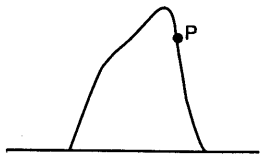
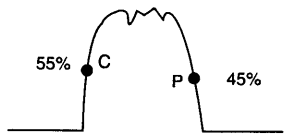
FOCUS ADJUSTMENT

By using FOCUS VR, adjust focus control for well scanning lines.

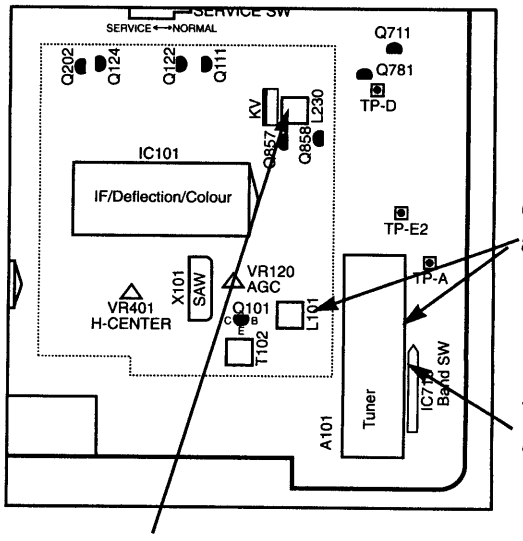
CIRCUIT ALIGNMENT

VIF ALIGNMENT



		DETECTOR ADJUSTMENT	OVERALL WAVEFORM
SETTING	DC 15V	IC351-1	IC351-1
	AGC voltage	IC101-48 p	IC101-48 p
	Output probe	Tuner TP (Side b)	Tuner TP (Side b)
	Input probe	TP-F	TP-F
	Tuning voltage	Tuner TU	Tuner TU
	Band	FREE	FREE
	Damping R	----------	KV-1 & KV-2
	System SW	I	I
	Sweep ATT	25	25
Adjustment		By using L230, adjust "P" to be maximum amplitude.	By using Tuner converter coil and L101, make the marker positions to P=45 ± 10% C=55 ± 10%
VIF waveform			

MAIN BOARD



Overall waveform adjustment

Tuner converter coil & Tuner TR

Detector adjustment

MEMORY IC REPLACEMENT: IMPORTANT NOTE

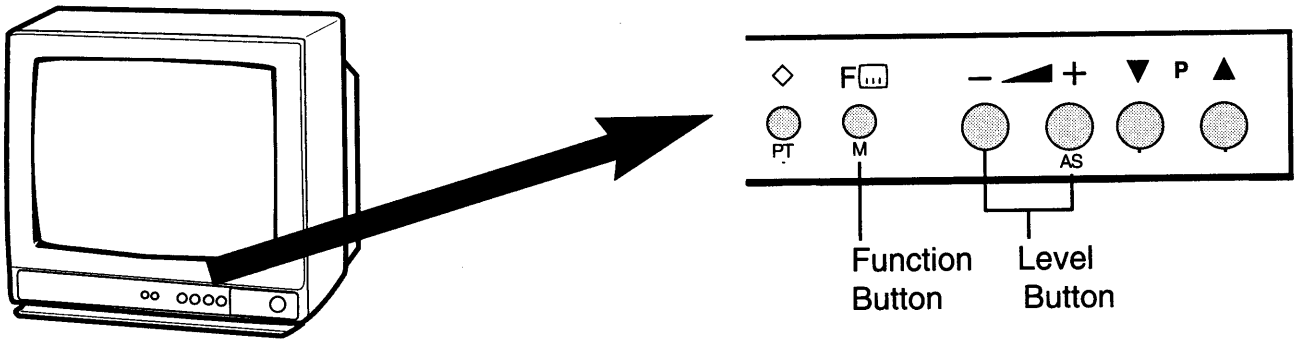
When IC790(X24C01P or X24C02P) is replaced, it is necessary to initialise the IC as follows.

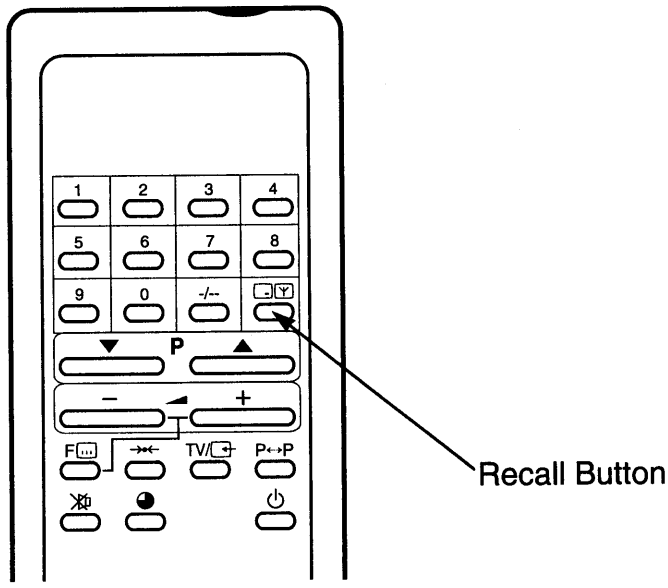
INITIALISATION OF MEMORY IC

1. When you press and hold the Function button on the TV set and press the Recall button on the RC transmitter, the following picture will appear on the screen.

ITEM - 1	SET→ 0

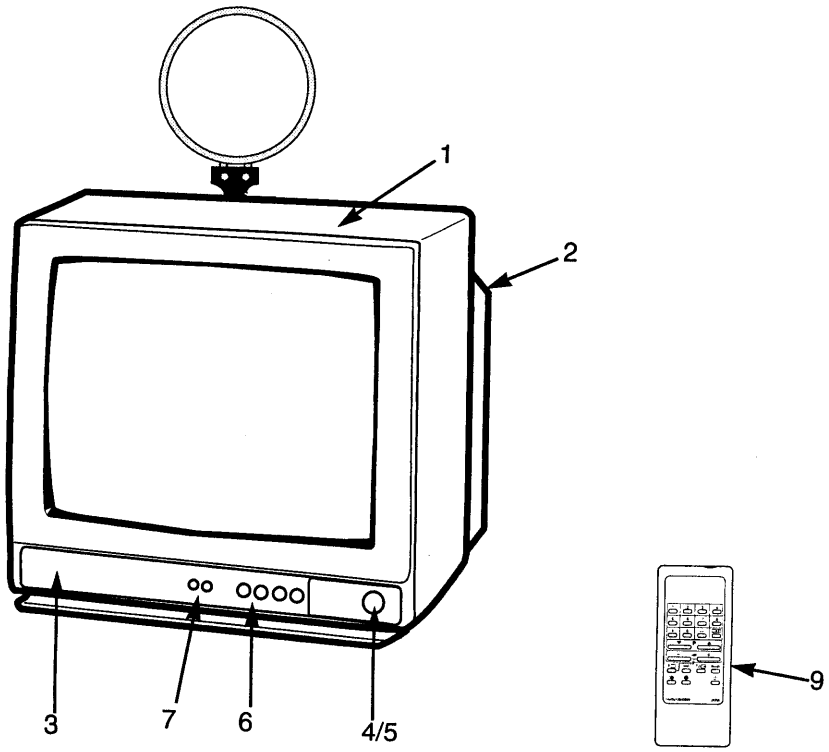
2. Confirm SET number of all items is **"0"** by the Function button.
3. If it is not "0", change to "0" by the Level (+/-) button. (Changing the SET number, automatically memorized.)
4. Press the Recall button, to return the normal TV mode.





CABINET PARTS LIST

Note: Parts order must contain Service ref No., Part No. and a Description.



Key No.	Part No.	Description
1.	610 248 9101	ASSY-CABINET FR - E7CC
2.	610 238 5783	CABINET BACK - E7CC
3.	610 248 5790	DEC SHEET - E7CC
4.	610 210 7302	COIL SPRING - D8HA
5.	610 248 5769	BUTTON POWER - E7CC
6.	610 248 5745	BUTTON UNIT A - E7CC
7.	610 248 5752	BUTTON UNIT B - E7CC
8.	610 238 2884	LOOP ANTENNA
9.	645 002 0636	ASSY, REMOCON JXRA
	610 247 0154	RC CASE TOP - JXRA
	610 247 0161	RC CASE BOTTOM - JXRA
	610 247 0178	RC BATTERY LID - JXRA

CHASSIS ELECTRICAL PARTS LIST

Product safety should be considered when a component replacement is made in any area of a receiver. Components indicated by a ⚠ mark in this parts list and the circuit diagram show components whose value have special significance to product safety. It is particularly recommended that only parts specified on the following parts list be used for components replacement pointed out by the mark.

Note Parts order must contain Service Ref. No., Part No., and descriptions.

Read description in the Capacitor and Resistor as follows:

CAPACITOR

CERAMIC 100P K 50V

- 50V — Rated Voltage
- K — Tolerance Symbols:

  Less than 10PF

  A: Not specified B: ±0.1PF C: ±0.25PF
  D: ±0.5PF F: ±1PF G: ±2PF
  R: ±0.25-0PF S: ±0-0.25PF E: +0-1PF

  More than 10PF

  A: Not specified B: ±0.1% C: ±0.25%
  D: ±0.5% F: ±1% G: ±2%
  H: ±3% J: ±5% K: ±10%
  L: ±15% M: ±20% N: ±30%
  P: +100-0% Q: +30-10% T: +50-10%
  U: +75-10% V: +20-10% W: +100-10%
  X: +40-20% Y: +150-10% Z: +80-20%
- 100P — Rated value: P=pico farad, U=Micro farad
- CERAMIC — Material:

  CERAMIC..... Ceramic
  MT-PAPER..... Metallized Paper
  POLYESTER..... Polyester
  MT-POLYEST.... Metallized Polyester
  POLYPRO..... Polypropylene
  MT-POLYPRO.... Metallized Polypropylene
  COMPO FILM..... Composite film
  MT-COMPO..... Metallized Composite
  STYRENE..... Styrene
  TA-SOLID..... Tantalum Solid
  AL-SOLID..... Aluminium Solid
  ELECT..... Electrolytic
  NP-ELECT..... Non-polarized Electrolytic
  OS-SOLID..... Aluminium Solid with Organic Semiconductive Electrolytic
  DL-ELECT..... Doble Layered Electrolytic

RESISTOR

CARBON 4.7K J A 1/4W

- 1/4W — Rated Wattage
- A — Performance Symbols:

  A: General B: Non flammable Z: Low noise
  Other: Temperature coefficient
- J — Tolerance Symbols:

  A: ±0.05% B: ±0.1% C: ±0.25% D: ±0.5%
  F: ±1% G: ±2% J: ±5% K: ±10%
  M: ±20% P: +5-15%
- 4.7K — Rated value, ohms:

  K: 1,000, M: 1,000,000
- CARBON — Material:

  CARBON..... Carbon
  MT-FILM..... Metal Film
  OXIDE-MT..... Oxide Metal Film
  SOLID..... Composition
  MT-GLAZE..... Metal Glaze
  WIRE WOUND... Wire Wound
  CERAMIC RES.. Ceramic
  FUSIBLE RES.... Fusible

610 249 5591 MAIN PCB ASSY-E7CC UE2783C

Ref. No.	Part No.	Description
A101	610 249 5607	MAIN SUB PCB ASSY-E7CC
A601	610 248 8036	CRT SUB PCB ASSY-E7CD
TRANSISTOR		
Q101	405 014 9207	TR 2SC2570A
Q111	406 007 2106	TR JC546A
	406 007 2007	TR JC546B
	405 019 1909	TR 2SC536-E-NP
	405 019 2708	TR 2SC536-F-NP
	405 019 3804	TR 2SC536-G-NP
Q122	406 007 2106	TR JC546A
	406 007 2007	TR JC546B
	405 019 1909	TR 2SC536-E-NP
	405 019 2708	TR 2SC536-F-NP
	405 019 3804	TR 2SC536-G-NP
Q124	405 004 4205	TR 2SA608-E-CTV-NP
	405 004 4809	TR 2SA608-F-CTV-NP
	405 028 7909	TR 2SA608-G-CTV-NP
Q172	406 007 2106	TR JC546A
	406 007 2007	TR JC546B
	405 019 1909	TR 2SC536-E-NP
	405 019 2708	TR 2SC536-F-NP
	405 019 3804	TR 2SC536-G-NP
Q202	406 007 2106	TR JC546A
	406 007 2007	TR JC546B
	405 019 1909	TR 2SC536-E-NP
	405 019 2708	TR 2SC536-F-NP
	405 019 3804	TR 2SC536-G-NP
Q311	406 007 1901	TR JC556A
	406 007 1802	TR JC556B
	405 004 4205	TR 2SA608-E-CTV-NP
	405 004 4809	TR 2SA608-F-CTV-NP
	405 028 7909	TR 2SA608-G-CTV-NP
Q312	405 058 0208	TR 2SC3807-R-CTV-YA
Q313	405 022 8506	TR 2SD1710-CTV-YB
Q351	405 009 6907	TR 2SB985-S
	405 009 7003	TR 2SB985-T
Q352	406 007 2106	TR JC546A
	406 007 2007	TR JC546B
	405 019 1909	TR 2SC536-E-NP
	405 019 2708	TR 2SC536-F-NP
	405 019 3804	TR 2SC536-G-NP
Q353	406 007 2106	TR JC546A
	406 007 2007	TR JC546B
	405 019 1909	TR 2SC536-E-NP
	405 019 2708	TR 2SC536-F-NP
	405 019 3804	TR 2SC536-G-NP
Q354	405 008 4805	TR 2SB764-E
Q431	405 014 2406	TR 2SC2383-O(SAN)
	405 014 2505	TR 2SC2383-R(SAN)
Q432	405 022 6601	TR 2SD1649-CTV-YB
Q434	406 007 2106	TR JC546A
	406 007 2007	TR JC546B
	405 019 1909	TR 2SC536-E-NP
	405 019 2708	TR 2SC536-F-NP

Ref. No.	Part No.	Description
	405 019 3804	TR 2SC536-G-NP
Q436	406 007 2106	TR JC546A
	406 007 2007	TR JC546B
	405 019 1909	TR 2SC536-E-NP
	405 019 2708	TR 2SC536-F-NP
	405 019 3804	TR 2SC536-G-NP
Q437	406 007 2106	TR JC546A
	406 007 2007	TR JC546B
	405 019 1909	TR 2SC536-E-NP
	405 019 2708	TR 2SC536-F-NP
	405 019 3804	TR 2SC536-G-NP
Q601	406 006 1902	TR BF422
	405 040 5600	TR 2SC2228-D
	405 029 6901	TR 2SC2228-E
Q611	406 006 1902	TR BF422
	405 040 5600	TR 2SC2228-D
	405 029 6901	TR 2SC2228-E
Q621	406 006 1902	TR BF422
	405 040 5600	TR 2SC2228-D
	405 029 6901	TR 2SC2228-E
Q640	406 007 1901	TR JC556A
	406 007 1802	TR JC556B
	405 004 4205	TR 2SA608-E-CTV-NP
	405 004 4809	TR 2SA608-F-CTV-NP
	405 028 7909	TR 2SA608-G-CTV-NP
Q703	406 007 2106	TR JC546A
	406 007 2007	TR JC546B
	405 019 1909	TR 2SC536-E-NP
	405 019 2708	TR 2SC536-F-NP
	405 019 3804	TR 2SC536-G-NP
Q708	406 007 1901	TR JC556A
	406 007 1802	TR JC556B
	405 004 4205	TR 2SA608-E-CTV-NP
	405 004 4809	TR 2SA608-F-CTV-NP
	405 028 7909	TR 2SA608-G-CTV-NP
Q711	405 118 4207	TR PH2369
Q713	406 007 2106	TR JC546A
	406 007 2007	TR JC546B
	405 019 1909	TR 2SC536-E-NP
	405 019 2708	TR 2SC536-F-NP
	405 019 3804	TR 2SC536-G-NP
Q714	406 007 2106	TR JC546A
	406 007 2007	TR JC546B
	405 019 1909	TR 2SC536-E-NP
	405 019 2708	TR 2SC536-F-NP
	405 019 3804	TR 2SC536-G-NP
Q722	406 007 2106	TR JC546A
	406 007 2007	TR JC546B
	405 019 1909	TR 2SC536-E-NP
	405 019 2708	TR 2SC536-F-NP
	405 019 3804	TR 2SC536-G-NP
Q781	406 007 2106	TR JC546A
	406 007 2007	TR JC546B
	405 019 1909	TR 2SC536-E-NP
	405 019 2708	TR 2SC536-F-NP
	405 019 3804	TR 2SC536-G-NP
Q840	406 007 2106	TR JC546A
	406 007 2007	TR JC546B
	405 019 1909	TR 2SC536-E-NP
	405 019 2708	TR 2SC536-F-NP
	405 019 3804	TR 2SC536-G-NP
Q854	406 007 2106	TR JC546A
	406 007 2007	TR JC546B
	405 019 1909	TR 2SC536-E-NP
	405 019 2708	TR 2SC536-F-NP
	405 019 3804	TR 2SC536-G-NP
Q857	406 007 2106	TR JC546A
	406 007 2007	TR JC546B
	405 019 1909	TR 2SC536-E-NP
	405 019 2708	TR 2SC536-F-NP
	405 019 3804	TR 2SC536-G-NP
Q858	406 007 1901	TR JC556A
	406 007 1802	TR JC556B
	405 004 4205	TR 2SA608-E-CTV-NP
	405 004 4809	TR 2SA608-F-CTV-NP
	405 028 7909	TR 2SA608-G-CTV-NP

INTEGRATED CIRCUIT

IC101	409 309 6209	IC TDA8361/N3
IC171	409 073 1509	IC AN5265
IC270	409 291 0605	IC TDA4661/V2
	409 322 0505	IC TDA4662/V1
IC351	409 143 3402	IC AN78M12-LB
	409 026 9507	IC L78M12-RA
IC352	409 285 5203	IC L78M08-RA
IC451	409 183 5008	IC LA7832
IC701	410 184 8608	IC M37211M2-524SP
IC790	409 247 7702	IC ST24C02AB1
	409 281 8307	IC 24C02A/P

CAPACITOR

C101	403 201 5001	ELECT	330U	M	16V
C105	403 248 1400	ELECT	1U	M	50V
C108	403 011 3808	CERAMIC	120P	J	50V
C109	403 030 5401	CERAMIC	68P	J	50V
C110	403 028 2009	CERAMIC	56P	J	50V
C113	403 069 8305	CERAMIC	0.01U	Z	50V
C114	403 069 8305	CERAMIC	0.01U	Z	50V
C115	403 069 8305	CERAMIC	0.01U	Z	50V
C117	403 208 6308	ELECT	220U	M	16V
C121	403 270 2901	MT-POLYEST	0.1U	K	63V
	403 067 5603	MT-COMPO	0.1U	J	50V
	403 243 6806	MT-COMPO	0.1U	J	50V
C122	403 270 2901	MT-POLYEST	0.1U	K	63V
	403 067 5603	MT-COMPO	0.1U	J	50V
	403 243 6806	MT-COMPO	0.1U	J	50V
C123	403 233 0807	ELECT	10U	M	50V
C126	403 061 2202	POLYESTER	3900P	K	50V
	403 061 2400	POLYESTER	3900P	K	50V
	403 179 1401	POLYESTER	3900P	K	50V
C127	403 069 0507	CERAMIC	1000P	K	50V
C128	403 248 2803	ELECT	2.2U	M	50V
C129	403 028 2009	CERAMIC	56P	J	50V
C130	403 069 8305	CERAMIC	0.01U	Z	50V
C131	403 248 1608	ELECT	47U	M	16V
C132	403 270 2901	MT-POLYEST	0.1U	K	63V
	403 067 5603	MT-COMPO	0.1U	J	50V
	403 243 6806	MT-COMPO	0.1U	J	50V
C134	403 060 6102	POLYESTER	3300P	K	50V
	403 060 6300	POLYESTER	3300P	K	50V
	403 179 1807	POLYESTER	3300P	K	50V
C135	403 270 2901	MT-POLYEST	0.1U	K	63V
	403 067 5603	MT-COMPO	0.1U	J	50V
	403 243 6806	MT-COMPO	0.1U	J	50V
C136	403 199 3102	ELECT	1000U	M	10V
C137	403 270 3908	MT-POLYEST	0.47U	K	63V
	403 067 7805	MT-COMPO	0.47U	J	50V
	403 264 2207	MT-COMPO	0.47U	J	50V
C138	403 248 2803	ELECT	2.2U	M	50V
C141	403 011 3808	CERAMIC	120P	J	50V
C172	403 270 3908	MT-POLYEST	0.47U	K	63V
	403 067 7805	MT-COMPO	0.47U	J	50V
	403 264 2207	MT-COMPO	0.47U	J	50V
C173	403 056 7908	POLYESTER	1000P	K	50V
	403 056 8103	POLYESTER	1000P	K	50V
	403 179 3900	POLYESTER	1000P	K	50V
C174	403 258 3302	ELECT	33U	M	16V
C178	403 258 3203	ELECT	22U	M	16V
C180	403 270 2901	MT-POLYEST	0.1U	K	63V
	403 067 5603	MT-COMPO	0.1U	J	50V
	403 243 6806	MT-COMPO	0.1U	J	50V
C181	403 218 8101	ELECT	1000U	M	25V
C182	403 248 1905	ELECT	10U	M	16V
C183	403 248 1905	ELECT	10U	M	16V

Ref. No.	Part No.	Description			Ref. No.	Part No.	Description		
C184	403 270 3403	MT-POLYEST	0.22U K	63V		404 060 6000	CERAMIC	1000P M	400V
	403 067 6709	MT-COMPO	0.22U J	50V	C334	404 059 9203	CERAMIC	1000P M	400V
	403 263 5704	MT-COMPO	0.22U J	50V		404 060 6000	CERAMIC	1000P M	400V
C185	403 199 9708	ELECT	470U M	25V	⚠C351	403 165 8605	CERAMIC	470P K	2K
C187	403 270 3403	MT-POLYEST	0.22U K	63V		403 275 8106	CERAMIC	470P K	2K
	403 067 6709	MT-COMPO	0.22U J	50V		403 232 1805	CERAMIC	470P K	2K
	403 263 5704	MT-COMPO	0.22U J	50V		403 186 1302	CERAMIC	470P K	2K
C188	403 233 1507	ELECT	4.7U M	50V	C354	403 165 6106	CERAMIC	470P K	1K
C202	403 270 2901	MT-POLYEST	0.1U K	63V		403 269 1809	CERAMIC	470P K	1K
	403 067 5603	MT-COMPO	0.1U J	50V		403 232 0501	CERAMIC	470P K	1K
	403 243 6806	MT-COMPO	0.1U J	50V		403 186 2903	CERAMIC	470P K	1K
C203	403 061 8105	POLYESTER	4700P K	50V	C361	404 042 4505	ELECT	220U M	160V
	403 061 8303	POLYESTER	4700P K	50V	C362	403 134 1309	ELECT	10U M	160V
	403 179 1104	POLYESTER	4700P K	50V		403 275 6904	ELECT	10U M	160V
C204	403 270 2901	MT-POLYEST	0.1U K	63V		403 275 7000	ELECT	10U M	160V
	403 067 5603	MT-COMPO	0.1U J	50V	C363	403 154 1907	ELECT	1000U M	35V
	403 243 6806	MT-COMPO	0.1U J	50V	C364	403 148 0404	ELECT	1000U M	25V
C205	403 270 2901	MT-POLYEST	0.1U K	63V		403 205 3409	ELECT	1000U M	25V
	403 067 5603	MT-COMPO	0.1U J	50V		403 190 2708	ELECT	1000U M	25V
	403 243 6806	MT-COMPO	0.1U J	50V	C365	403 148 0404	ELECT	1000U M	25V
C206	403 270 3908	MT-POLYEST	0.47U K	63V		403 205 3409	ELECT	1000U M	25V
	403 067 7805	MT-COMPO	0.47U J	50V		403 190 2708	ELECT	1000U M	25V
	403 264 2207	MT-COMPO	0.47U J	50V	C371	403 126 4509	ELECT	100U M	16V
C207	403 248 2803	ELECT	2.2U M	50V		403 218 0600	ELECT	100U M	16V
C208	403 069 8305	CERAMIC	0.01U Z	50V		403 197 6600	ELECT	100U M	16V
C209	403 270 2901	MT-POLYEST	0.1U K	63V	C372	403 233 0302	ELECT	100U M	16V
	403 067 5603	MT-COMPO	0.1U J	50V	C383	403 160 0000	ELECT	470U M	10V
	403 243 6806	MT-COMPO	0.1U J	50V	C400	403 014 0200	CERAMIC	18P J	50V
C210	403 069 8305	CERAMIC	0.01U Z	50V	C401	403 270 2901	MT-POLYEST	0.1U K	63V
C211	403 233 0807	ELECT	10U M	50V		403 067 5603	MT-COMPO	0.1U J	50V
C212	403 070 7403	CERAMIC	150P K	50V		403 243 6806	MT-COMPO	0.1U J	50V
C215	403 270 3908	MT-POLYEST	0.47U K	63V	C402	403 270 3809	MT-POLYEST	0.047U K	63V
	403 067 7805	MT-COMPO	0.47U J	50V		403 067 7706	MT-COMPO	0.047U J	50V
	403 264 2207	MT-COMPO	0.47U J	50V		403 256 1102	MT-COMPO	0.047U J	50V
C216	403 270 2901	MT-POLYEST	0.1U K	63V	C403	403 061 8105	POLYESTER	4700P K	50V
	403 067 5603	MT-COMPO	0.1U J	50V		403 061 8303	POLYESTER	4700P K	50V
	403 243 6806	MT-COMPO	0.1U J	50V		403 179 1104	POLYESTER	4700P K	50V
C217	403 233 1507	ELECT	4.7U M	50V	C404	403 086 2300	NP-ELECT	1U M	50V
C231	403 085 7405	NP-ELECT	10U M	25V	C405	403 060 0506	POLYESTER	2700P K	50V
C233	403 233 0807	ELECT	10U M	50V		403 060 0704	POLYESTER	2700P K	50V
C270	403 059 5901	POLYESTER	0.022U K	50V		403 179 2200	POLYESTER	2700P K	50V
	403 059 6205	POLYESTER	0.022U K	50V	C406	403 059 5901	POLYESTER	0.022U K	50V
	403 179 2408	POLYESTER	0.022U K	50V		403 059 6205	POLYESTER	0.022U K	50V
C271	403 069 0507	CERAMIC	1000P K	50V		403 179 2408	POLYESTER	0.022U K	50V
C272	403 069 0507	CERAMIC	1000P K	50V	C407	403 160 0000	ELECT	470U M	10V
C275	403 248 1905	ELECT	10U M	16V	C409	403 074 8901	CERAMIC	680P K	50V
⚠C301	404 047 3602	MT-POLYEST	0.1U M	125V	C410	403 062 4403	POLYESTER	5600P J	50V
	404 044 0901	MT-COMPO	0.1U M	250V		403 138 5600	POLYESTER	5600P J	50V
⚠C302	404 047 3602	MT-POLYEST	0.1U M	125V		403 179 0800	POLYESTER	5600P J	50V
	404 044 0901	MT-COMPO	0.1U M	250V	C431	403 270 4004	MT-POLYEST	0.056U K	63V
C303	403 076 7100	CERAMIC	1000P M	1K		403 067 7904	MT-COMPO	0.056U J	50V
C304	403 076 7100	CERAMIC	1000P M	1K		403 246 2102	MT-COMPO	0.056U J	50V
C305	403 076 7100	CERAMIC	1000P M	1K	C432	403 075 7101	CERAMIC	1000P K	500V
C306	403 076 7100	CERAMIC	1000P M	1K	C433	403 076 3102	CERAMIC	3900P K	500V
C307	404 031 1003	ELECT	100U M	400V	C434	403 229 1207	ELECT	47U M	35V
	404 059 6400	ELECT	100U M	385V	⚠C435	404 061 0403	MT-POLYPRO	4500P J	1.5K
	404 004 6806	ELECT	100U M	400V		404 061 0502	MT-POLYPRO	4500P J	1.5K
	404 052 2003	ELECT	100U M	400V	⚠C436	403 165 7608	CERAMIC	220P K	3K
C314	403 061 4008	POLYESTER	0.039U K	50V		403 275 8304	CERAMIC	220P K	3K
	403 061 4206	POLYESTER	0.039U K	50V		403 232 2703	CERAMIC	220P K	3K
	403 179 1302	POLYESTER	0.039U K	50V		403 186 0503	CERAMIC	220P K	3K
C315	403 057 6801	POLYESTER	0.012U J	50V	C437	403 270 3908	MT-POLYEST	0.47U K	63V
	403 214 5203	POLYESTER	0.012U J	50V		403 067 7805	MT-COMPO	0.47U J	50V
	403 178 9408	POLYESTER	0.012U J	50V		403 264 2207	MT-COMPO	0.47U J	50V
C316	403 165 8407	CERAMIC	680P K	2K	C441	403 082 7408	POLYPRO	0.15U J	200V
	403 275 8205	CERAMIC	680P K	2K	C442	403 082 7408	POLYPRO	0.15U J	200V
	403 232 2109	CERAMIC	680P K	2K	C443	403 134 1903	ELECT	4.7U M	160V
	403 186 1104	CERAMIC	680P K	2K	C444	403 165 7202	CERAMIC	390P K	3K
C317	403 059 5901	POLYESTER	0.022U K	50V		403 275 8403	CERAMIC	390P K	3K
	403 059 6205	POLYESTER	0.022U K	50V		403 232 3106	CERAMIC	390P K	3K
	403 179 2408	POLYESTER	0.022U K	50V		403 185 9903	CERAMIC	390P K	3K
C331	404 059 9203	CERAMIC	1000P M	400V	C445	403 076 1405	CERAMIC	2700P K	500V

Ref. No.	Part No.	Description		
C451	403 218 8101	ELECT	1000U M	25V
C452	403 217 1103	ELECT	220U M	35V
C453	403 023 9706	CERAMIC	39P J	50V
C454	403 069 8305	CERAMIC	0.01U Z	50V
C455	403 076 6103	CERAMIC	820P K	500V
C456	403 233 0807	ELECT	10U M	50V
C458	403 233 0807	ELECT	10U M	50V
C461	403 218 8101	ELECT	1000U M	25V
C463	403 065 9801	MT-POLYEST	0.22U K	100V
	403 188 0907	MT-POLYEST	0.22U K	100V
C601	403 073 2900	CERAMIC	390P K	50V
C611	403 073 2900	CERAMIC	390P K	50V
C621	403 073 2900	CERAMIC	390P K	50V
C631	403 077 2708	CERAMIC	1000P P	2K
C634	403 060 8205	POLYESTER	0.033U K	50V
	403 060 8403	POLYESTER	0.033U K	50V
	403 179 1609	POLYESTER	0.033U K	50V
C635	403 259 8900	ELECT	1U M	160V
C703	403 018 6208	CERAMIC	220P J	50V
C704	403 068 9006	CERAMIC	100P K	50V
C705	403 068 9006	CERAMIC	100P K	50V
C706	403 068 9006	CERAMIC	100P K	50V
C709	403 248 1400	ELECT	1U M	50V
C711	403 248 2001	ELECT	4.7U M	25V
C712	403 248 1400	ELECT	1U M	50V
C713	403 248 1400	ELECT	1U M	50V
C716	403 233 1507	ELECT	4.7U M	50V
C717	403 068 9006	CERAMIC	100P K	50V
C718	403 071 5606	CERAMIC	220P K	50V
C719	403 069 0507	CERAMIC	1000P K	50V
C721	403 270 2901	MT-POLYEST	0.1U K	63V
	403 067 5603	MT-COMPO	0.1U J	50V
	403 243 6806	MT-COMPO	0.1U J	50V
C722	403 248 1608	ELECT	47U M	16V
C723	403 026 0700	CERAMIC	47P J	50V
C724	403 026 0700	CERAMIC	47P J	50V
C725	403 069 8305	CERAMIC	0.01U Z	50V
C727	403 270 2901	MT-POLYEST	0.1U K	63V
	403 067 5603	MT-COMPO	0.1U J	50V
	403 243 6806	MT-COMPO	0.1U J	50V
C729	403 248 1905	ELECT	10U M	16V
C731	403 270 3403	MT-POLYEST	0.22U K	63V
	403 067 6709	MT-COMPO	0.22U J	50V
	403 263 5704	MT-COMPO	0.22U J	50V
C732	403 270 2901	MT-POLYEST	0.1U K	63V
	403 067 5603	MT-COMPO	0.1U J	50V
	403 243 6806	MT-COMPO	0.1U J	50V
C744	403 068 9006	CERAMIC	100P K	50V
C745	403 069 8305	CERAMIC	0.01U Z	50V
C746	403 026 0809	CERAMIC	47P J	50V
C791	403 068 9006	CERAMIC	100P K	50V
C854	403 248 1905	ELECT	10U M	16V
C858	403 069 8305	CERAMIC	0.01U Z	50V
C873	403 248 2803	ELECT	2.2U M	50V
C874	403 270 3908	MT-POLYEST	0.47U K	63V
	403 067 7805	MT-COMPO	0.47U J	50V
	403 264 2207	MT-COMPO	0.47U J	50V

RESISTOR

R103	401 012 4503	CARBON	100 JA	1/4W
R104	401 027 2600	CARBON	5.6K JA	1/6W
R105	401 024 7004	CARBON	1K JA	1/6W
R106	401 025 7409	CARBON	220 JA	1/6W
R107	401 026 3707	CARBON	33 JA	1/6W
R121	401 020 2904	CARBON	47K JA	1/4W
R122	401 025 8703	CARBON	220K JA	1/6W
R123	401 025 8703	CARBON	220K JA	1/6W
R124	401 027 5502	CARBON	6.8K JA	1/6W
R125	401 025 3807	CARBON	180 JA	1/6W
R126	401 027 2600	CARBON	5.6K JA	1/6W
R127	401 024 6700	CARBON	100 JA	1/6W
R128	401 021 3009	CARBON	5.6K JA	1/4W
R129	401 012 7009	CARBON	10K JA	1/4W
R131	401 027 5502	CARBON	6.8K JA	1/6W
R132	401 027 0309	CARBON	47K JA	1/6W
R133	401 025 3807	CARBON	180 JA	1/6W
R134	401 024 7004	CARBON	1K JA	1/6W
R135	401 027 5205	CARBON	680 JA	1/6W
R138	401 025 7409	CARBON	220 JA	1/6W
R147	401 022 0809	CARBON	68 JA	1/4W
R150	401 024 7004	CARBON	1K JA	1/6W
R152	401 027 5205	CARBON	680 JA	1/6W
R153	401 026 9303	CARBON	47 JA	1/6W
R154	401 026 3905	CARBON	330 JA	1/6W
R170	401 014 5201	CARBON	15K JA	1/4W
R171	401 026 3707	CARBON	33 JA	1/6W
R172	401 021 1906	CARBON	560 JA	1/4W
R173	401 025 1902	CARBON	15K JA	1/6W
R177	401 016 4806	CARBON	22K JA	1/4W
R178	401 012 7009	CARBON	10K JA	1/4W
R183	401 024 7004	CARBON	1K JA	1/6W
R184	401 026 7408	CARBON	39K JA	1/6W
R185	401 017 6205	CARBON	3.3 JA	1/4W
R202	401 024 7707	CARBON	100K JA	1/6W
R204	401 012 4503	CARBON	100 JA	1/4W
R206	401 024 6700	CARBON	100 JA	1/6W
R207	401 024 6700	CARBON	100 JA	1/6W
R208	401 024 6700	CARBON	100 JA	1/6W
R209	401 027 5502	CARBON	6.8K JA	1/6W
R210	401 025 1902	CARBON	15K JA	1/6W
R213	401 025 8208	CARBON	22K JA	1/6W
R214	401 024 7400	CARBON	10K JA	1/6W
R215	401 025 4200	CARBON	1.8K JA	1/6W
R219	401 026 6609	CARBON	390 JA	1/6W
R220	401 014 2903	CARBON	150 JA	1/4W
R221	401 012 7009	CARBON	10K JA	1/4W
R222	401 027 5502	CARBON	6.8K JA	1/6W
R230	401 016 4806	CARBON	22K JA	1/4W
R231	401 016 5803	CARBON	220K JA	1/4W
R232	401 012 5708	CARBON	1K JA	1/4W
R233	401 000 7509	SOLID	1.5K KA	1/2W
R234	401 010 3102	CARBON	470 JA	1/2W
R235	401 019 3004	CARBON	39K JA	1/4W
R236	401 017 1804	CARBON	2.7K JA	1/4W
R237	401 016 3809	CARBON	2.2K JA	1/4W
R275	401 016 2604	CARBON	220 JA	1/4W
R301	401 008 8607	CARBON	220K JA	1/2W
R302	402 060 8109	WIRE WOUND	3.9 KA	5W
R311	401 021 3009	CARBON	5.6K JA	1/4W
R315	401 016 4806	CARBON	22K JA	1/4W
R317	401 021 1906	CARBON	560 JA	1/4W
R319	401 016 2604	CARBON	220 JA	1/4W
R320	401 007 5805	CARBON	120K JA	1/2W
R321	401 007 5805	CARBON	120K JA	1/2W
R322	401 014 5201	CARBON	15K JA	1/4W
R324	401 069 6000	OXIDE-MT	82 JA	2W
	401 069 6208	OXIDE-MT	82 JA	2W
R325	401 069 1708	OXIDE-MT	68 JA	2W
R326	401 016 3304	CARBON	2.2K GA	1/4W
⚠R331	402 000 8305	SOLID	5.6M KA	1/2W
⚠R332	402 000 8305	SOLID	5.6M KA	1/2W
R350	401 012 8105	CARBON	100K JA	1/4W
R351	401 066 7901	OXIDE-MT	22K JA	2W
	401 066 8007	OXIDE-MT	22K JA	2W
R352	401 066 9004	OXIDE-MT	27 JA	2W
	401 066 9103	OXIDE-MT	27 JA	2W
R353	401 020 2003	CARBON	4.7K JA	1/4W
R354	401 014 6109	CARBON	150K JA	1/4W
R355	401 010 4307	CARBON	47K JA	1/2W
R356	401 025 8208	CARBON	22K JA	1/6W
⚠R357	402 064 4404	FUSIBLE RES	10 J-	1W
R359	401 006 7602	CARBON	1 JA	1/2W
R360	401 059 3903	OXIDE-MT	1.5K JA	1W
	401 065 7506	OXIDE-MT	1.5K JA	2W

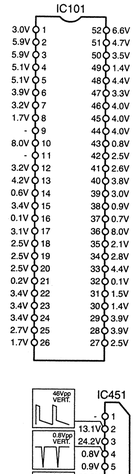
Ref. No.	Part No.	Description			Ref. No.	Part No.	Description		
R361	401 064 6104	OXIDE-MT	10 JA	2W	R641	401 020 2003	CARBON	4.7K JA	1/4W
	401 064 6302	OXIDE-MT	10 JA	2W	R642	401 018 3807	CARBON	3.3K JA	1/4W
R362	401 065 5601	OXIDE-MT	15 JA	2W	R644	401 018 2800	CARBON	330 JA	1/4W
	401 065 5809	OXIDE-MT	15 JA	2W	R707	401 012 4503	CARBON	100 JA	1/4W
R364	401 012 7009	CARBON	10K JA	1/4W	R708	401 024 9701	CARBON	12K JA	1/6W
R365	401 019 1901	CARBON	3.9K JA	1/4W	R709	401 023 3700	CARBON	82K JA	1/4W
R366	401 012 7009	CARBON	10K JA	1/4W	R710	401 024 7004	CARBON	1K JA	1/6W
R367	401 013 5301	CARBON	1.2K JA	1/4W	R711	401 026 4308	CARBON	3.3K JA	1/6W
R369	401 012 5708	CARBON	1K JA	1/4W	R712	401 025 4200	CARBON	1.8K JA	1/6W
R370	401 023 2802	CARBON	8.2K JA	1/4W	R713	401 025 1902	CARBON	15K JA	1/6W
R381	401 066 5907	OXIDE-MT	220 JA	2W	R715	401 012 7009	CARBON	10K JA	1/4W
	401 066 6102	OXIDE-MT	220 JA	2W	R716	401 026 4605	CARBON	33K JA	1/6W
R400	401 027 0309	CARBON	47K JA	1/6W	R717	401 024 9305	CARBON	1.2K JA	1/6W
R401	401 024 6700	CARBON	100 JA	1/6W	R718	401 026 7002	CARBON	3.9K JA	1/6W
R402	401 024 8001	CARBON	1M JA	1/6W	R720	401 012 7009	CARBON	10K JA	1/4W
R403	401 024 6700	CARBON	100 JA	1/6W	R721	401 018 4903	CARBON	33K JA	1/4W
R404	401 025 8208	CARBON	22K JA	1/6W	R723	401 024 7004	CARBON	1K JA	1/6W
R405	401 024 6700	CARBON	100 JA	1/6W	R724	401 025 1902	CARBON	15K JA	1/6W
R406	401 026 7606	CARBON	390K JA	1/6W	R726	401 012 7009	CARBON	10K JA	1/4W
R407	401 025 8208	CARBON	22K JA	1/6W	R727	401 027 9005	CARBON	82K JA	1/6W
R408	401 024 6700	CARBON	100 JA	1/6W	R728	401 025 1902	CARBON	15K JA	1/6W
R409	401 026 9907	CARBON	4.7K JA	1/6W	R729	401 026 3905	CARBON	330 JA	1/6W
R410	401 025 8208	CARBON	22K JA	1/6W	R734	401 026 9907	CARBON	4.7K JA	1/6W
R412	401 027 0309	CARBON	47K JA	1/6W	R735	401 027 8602	CARBON	8.2K JA	1/6W
R413	401 026 9907	CARBON	4.7K JA	1/6W	R736	401 025 1605	CARBON	1.5K JA	1/6W
R414	401 026 1000	CARBON	2.7K JA	1/6W	R738	401 017 2801	CARBON	27K JA	1/4W
R415	401 026 4605	CARBON	33K JA	1/6W	R743	401 025 1308	CARBON	150 JA	1/6W
R416	401 012 7009	CARBON	10K JA	1/4W	R744	401 026 9907	CARBON	4.7K JA	1/6W
R417	401 025 8208	CARBON	22K JA	1/6W	R745	401 025 1308	CARBON	150 JA	1/6W
R418	401 026 1307	CARBON	27K JA	1/6W	R746	401 026 9907	CARBON	4.7K JA	1/6W
R432	401 024 7004	CARBON	1K JA	1/6W	R747	401 024 6700	CARBON	100 JA	1/6W
R433	401 007 1104	CARBON	1K JA	1/2W	R748	401 024 6700	CARBON	100 JA	1/6W
R434	401 009 0907	CARBON	270 JA	1/2W	R749	401 026 7002	CARBON	3.9K JA	1/6W
R435	402 068 6008	WIRE WOUND	12 KA	5W	R750	401 026 4308	CARBON	3.3K JA	1/6W
R436	401 014 5201	CARBON	15K JA	1/4W	R758	401 021 3009	CARBON	5.6K JA	1/4W
R443	401 016 5803	CARBON	220K JA	1/4W	R759	401 016 3809	CARBON	2.2K JA	1/4W
R444	401 058 3706	OXIDE-MT	1K JA	1W	R761	401 065 8503	OXIDE-MT	15K JA	2W
	401 064 8603	OXIDE-MT	1K JA	2W	R762	401 024 7400	CARBON	10K JA	1/6W
R450	401 027 3003	CARBON	56K JA	1/6W	R763	401 025 1902	CARBON	15K JA	1/6W
R451	401 011 4306	CARBON	8.2 JA	1/2W	R764	401 025 4903	CARBON	180K JA	1/6W
R452	401 025 1902	CARBON	15K JA	1/6W	R766	401 027 2600	CARBON	5.6K JA	1/6W
R453	401 027 5502	CARBON	6.8K JA	1/6W	R767	401 026 9907	CARBON	4.7K JA	1/6W
R454	401 025 7409	CARBON	220 JA	1/6W	R768	401 020 0801	CARBON	470 JA	1/4W
R455	401 027 2600	CARBON	5.6K JA	1/6W	R776	401 025 8208	CARBON	22K JA	1/6W
R456	401 020 2003	CARBON	4.7K JA	1/4W	R780	401 024 7707	CARBON	100K JA	1/6W
R457	401 027 2600	CARBON	5.6K JA	1/6W	R781	401 020 2003	CARBON	4.7K JA	1/4W
R459	401 006 8401	CARBON	1.5 JA	1/2W	R782	401 025 8208	CARBON	22K JA	1/6W
R460	401 008 0908	CARBON	180 JA	1/2W	R786	401 024 7400	CARBON	10K JA	1/6W
R461	401 020 2003	CARBON	4.7K JA	1/4W	R792	401 025 1902	CARBON	15K JA	1/6W
R462	401 020 2003	CARBON	4.7K JA	1/4W	R796	401 026 6609	CARBON	390 JA	1/6W
R467	401 007 1104	CARBON	1K JA	1/2W	R802	401 026 9600	CARBON	470 JA	1/6W
R481	401 057 4100	OXIDE-MT	0.33 JA	1W	R811	401 024 7707	CARBON	100K JA	1/6W
R601	401 019 1000	CARBON	390 JA	1/4W	R812	401 025 4606	CARBON	18K JA	1/6W
R602	401 026 4308	CARBON	3.3K JA	1/6W	R815	401 015 3800	CARBON	18K JA	1/4W
R603	401 021 1906	CARBON	560 JA	1/4W	R816	401 024 7400	CARBON	10K JA	1/6W
R604	401 065 4505	OXIDE-MT	12K JA	2W	R821	401 024 7707	CARBON	100K JA	1/6W
	401 065 4604	OXIDE-MT	12K JA	2W	R822	401 025 4606	CARBON	18K JA	1/6W
R605	401 002 0102	SOLID	3.3K KA	1/2W	R823	401 027 5502	CARBON	6.8K JA	1/6W
R611	401 019 1000	CARBON	390 JA	1/4W	R824	401 026 9907	CARBON	4.7K JA	1/6W
R612	401 026 4308	CARBON	3.3K JA	1/6W	R825	401 021 3009	CARBON	5.6K JA	1/4W
R613	401 013 5301	CARBON	1.2K JA	1/4W	R826	401 024 7400	CARBON	10K JA	1/6W
R614	401 065 4505	OXIDE-MT	12K JA	2W	R841	401 025 8208	CARBON	22K JA	1/6W
	401 065 4604	OXIDE-MT	12K JA	2W	R842	401 026 1000	CARBON	2.7K JA	1/6W
R615	401 002 0102	SOLID	3.3K KA	1/2W	R851	401 024 9701	CARBON	12K JA	1/6W
R621	401 019 1000	CARBON	390 JA	1/4W	R852	401 024 9701	CARBON	12K JA	1/6W
R622	401 026 4308	CARBON	3.3K JA	1/6W	R853	401 027 2303	CARBON	560 JA	1/6W
R623	401 015 2704	CARBON	1.8K JA	1/4W	R854	401 024 7707	CARBON	100K JA	1/6W
R624	401 065 4505	OXIDE-MT	12K JA	2W	R856	401 027 6608	CARBON	75 JA	1/6W
	401 065 4604	OXIDE-MT	12K JA	2W	R862	401 024 7004	CARBON	1K JA	1/6W
R625	401 002 0102	SOLID	3.3K KA	1/2W	R863	401 024 9305	CARBON	1.2K JA	1/6W
R627	401 021 1906	CARBON	560 JA	1/4W	R866	401 027 5205	CARBON	680 JA	1/6W
R631	401 001 7607	SOLID	270K KA	1/2W	R868	401 027 6608	CARBON	75 JA	1/6W

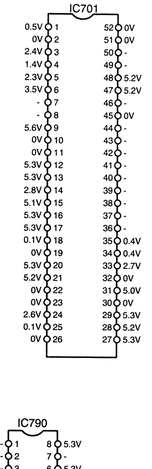
Ref. No.	Part No.	Description
R870	401 027 6608	CARBON 75 JA 1/6W
R873	401 027 2600	CARBON 5.6K JA 1/6W
R883	401 018 3807	CARBON 3.3K JA 1/4W
R884	401 024 7004	CARBON 1K JA 1/6W
R885	401 013 5301	CARBON 1.2K JA 1/4W
VARIABLE RESISTOR		
VR120	610 237 8726	VR B-10K
	610 239 7550	VR B-10K
VR351	610 237 8702	VR B-2.2K
	610 239 7574	VR B-2K
VR401	610 237 8726	VR B-10K
	610 239 7550	VR B-10K
VR431	610 230 8013	VR B-100
	610 232 7892	VR B-100
VR601	645 002 1916	VR,SEMI,1K S
VR602	645 003 4121	VR,SEMI,4.7K S
VR611	645 002 1916	VR,SEMI,1K S
VR612	645 003 4121	VR,SEMI,4.7K S
VR622	645 003 4121	VR,SEMI,4.7K S
TRANSFORMER		
T311	610 216 4534	CONVERTER TRANS
	610 236 2084	CONVERTER TRANS
T431	610 000 1053	DRIVE TRANS
	610 000 1060	DRIVE TRANS
⚠T471	645 000 0089	TRANS,FLYBACK
COIL		
L101	610 037 5727	S TRANS
L103	610 031 4177	PEAKING COIL
L125	610 031 3873	PEAKING COIL 10UHK
L141	610 031 3873	PEAKING COIL 10UHK
L161	610 031 3019	PEAKING COIL 10UHK
L204	610 029 6329	PEAKING COIL 4.7UH K
L230	610 037 4522	S COIL
L280	610 029 5926	PEAKING COIL 10UH K
L301	610 031 5945	LINE FILTER
	610 031 5976	LINE FILTER
L304	645 002 4511	CORE,PIPE
L305	645 002 4511	CORE,PIPE
L702	610 029 6367	PEAKING COIL 5.6UH K
L703	610 029 6367	PEAKING COIL 5.6UH K
L704	610 029 6121	PEAKING COIL 22UH K
L705	610 029 6725	PEAKING COIL 1.5UH M
L706	610 029 5926	PEAKING COIL 10UH K
L872	401 012 5708	CARBON 1K JA 1/4W
DIODE		
D123	407 075 9905	ZENER DIODE EQA03-11AV3
	407 075 9905	ZENER DIODE EQA03-11A
D171	408 007 8607	DIODE 1N4148
	407 013 1206	DIODE 1S1555
D201	407 127 3400	ZD BZX55C12-GPS-26
	407 048 6900	ZENER DIODE EQA02-12A
	407 048 7105	ZENER DIODE EQA02-12B
D202	407 127 3400	ZD BZX55C12-GPS-26
	407 048 6900	ZENER DIODE EQA02-12A
	407 048 7105	ZENER DIODE EQA02-12B
D203	407 127 3400	ZD BZX55C12-GPS-26
	407 048 6900	ZENER DIODE EQA02-12A
	407 048 7105	ZENER DIODE EQA02-12B
D231	408 007 8607	DIODE 1N4148
	407 013 1008	DIODE 1S1553
D232	408 007 8607	DIODE 1N4148
	407 013 1206	DIODE 1S1555
D233	408 007 8607	DIODE 1N4148
	407 013 1008	DIODE 1S1553
D234	408 007 8607	DIODE 1N4148
	407 013 1206	DIODE 1S1555
D275	407 048 1202	ZENER DIODE EQA02-05E
D303	407 006 6300	DIODE ERC05-10B
	407 009 6901	DIODE RM11C
	407 064 6908	DIODE TVR4N(X)
D304	407 006 6300	DIODE ERC05-10B
	407 009 6901	DIODE RM11C
	407 064 6908	DIODE TVR4N(X)
D305	407 006 6300	DIODE ERC05-10B
	407 009 6901	DIODE RM11C
	407 064 6908	DIODE TVR4N(X)
D306	407 006 6300	DIODE ERC05-10B
	407 009 6901	DIODE RM11C
	407 064 6908	DIODE TVR4N(X)
D314	408 007 8607	DIODE 1N4148
	407 013 1008	DIODE 1S1553
D315	407 105 8700	PHOTO COUPLE PC113B
	408 009 8407	PHOTO COUPLE CNY17F-3OPT6
D316	408 007 8607	DIODE 1N4148
	407 013 1008	DIODE 1S1553
D317	407 007 6606	DIODE ES1
	407 007 6903	DIODE ES1Z
	408 009 9008	DIODE BYD33D
D351	407 007 7702	DIODE EU2A
	408 009 9206	DIODE BYD33J
	407 064 7004	DIODE 1S1835
D353	407 007 6606	DIODE ES1
	408 009 9305	DIODE BYD33G
	407 013 1909	DIODE 1S1834
D354	407 007 7801	DIODE EU2Z
D355	407 007 6606	DIODE ES1
D361	407 048 2407	ZENER DIODE EQA02-06E
	407 048 2605	ZENER DIODE EQA02-06F
D362	408 007 8607	DIODE 1N4148
	407 013 1206	DIODE 1S1555
D364	408 007 8607	DIODE 1N4148
	407 013 1206	DIODE 1S1555
D365	408 007 8607	DIODE 1N4148
	407 013 1206	DIODE 1S1555
D366	408 007 8607	DIODE 1N4148
	407 013 1206	DIODE 1S1555
D383	407 048 1202	ZENER DIODE EQA02-05E
D393	408 007 8607	DIODE 1N4148
	407 013 1206	DIODE 1S1555
D401	407 075 9905	ZENER DIODE EQA03-11AV3
	407 075 9905	ZENER DIODE EQA03-11A
D431	407 048 4906	ZENER DIODE EQA02-09A
	407 048 5101	ZENER DIODE EQA02-09B
D441	407 011 4407	DIODE TVR1G
D451	407 005 7308	DIODE EM01Z
	408 009 9008	DIODE BYD33D
D452	408 007 8607	DIODE 1N4148
	407 013 1206	DIODE 1S1555
D471	407 118 2207	ZENER DIODE 1Z75
D703	407 055 7907	ZENER DIODE RD3.6EL
D704	409 013 0104	IC HZT33
	409 026 8005	IC L5630
	409 057 5103	IC UPC574J
D712	408 007 8607	DIODE 1N4148
	407 013 1206	DIODE 1S1555
D720	407 013 1206	DIODE 1S1555
D803	407 116 6504	LED SLP-181B-51
D806	407 127 3400	ZD BZX55C12-GPS-26
	407 048 6900	ZENER DIODE EQA02-12A
	407 048 7105	ZENER DIODE EQA02-12B
D851	407 127 3400	ZD BZX55C12-GPS-26
	407 048 6900	ZENER DIODE EQA02-12A
	407 048 7105	ZENER DIODE EQA02-12B
D855	407 127 3400	ZD BZX55C12-GPS-26
	407 048 6900	ZENER DIODE EQA02-12A
	407 048 7105	ZENER DIODE EQA02-12B
D856	407 127 3400	ZD BZX55C12-GPS-26
	407 048 6900	ZENER DIODE EQA02-12A
	407 048 7105	ZENER DIODE EQA02-12B
D873	407 127 3400	ZD BZX55C12-GPS-26

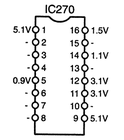
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
	407 048 6900	ZENER DIODE EQA02-12A			
	407 048 7105	ZENER DIODE EQA02-12B			
D875	407 127 3400	ZD BZX55C12-GPS-26			
	407 048 6900	ZENER DIODE EQA02-12A			
	407 048 7105	ZENER DIODE EQA02-12B			
MISCELLANEOUS					
⚠F301	423 022 2102	FUSE 250V 4A			
A100	610 239 1145	UHF VARACTOR TUNER			
A701	610 224 5806	RC PREAMP 409-1L			
K6S	610 012 5018	HOLDER 1P			
K601	610 249 3108	CRT SOCKET			
K801	610 009 8275	SOCKET 21P			
	610 218 6673	SOCKET 21P			
	610 225 2361	SOCKET 21P			
K801A	610 081 9887	SOCKET MTG BRKT-D8PC			
K801B1	412 009 8107	SCR TAP2 FLG 3X10E			
K801B2	412 009 8107	SCR TAP2 FLG 3X10E			
PS301	408 003 6805	THERMISTOR 902P44E180MR14			
	408 000 3906	TH PTH451A112BF180M270			
SW220	610 011 2728	LEVER SWITCH			
SW301	645 003 6811	SWITCH,PUSH POWER 2P-2T			
SW701	610 011 2698	PUSH SWITCH			
SW702	610 011 2698	PUSH SWITCH			
SW703	610 011 2698	PUSH SWITCH			
SW704	610 011 2698	PUSH SWITCH			
SW705	610 011 2698	PUSH SWITCH			
SW706	610 011 2698	PUSH SWITCH			
X101	421 004 7404	SAW F TSF5343			
X124	610 015 2885	CERAMIC FILTER			
	645 001 7902	TRAP,CERAMIC 6.0MHZ			
X151	645 003 2813	CERAMIC FILTER			
X400	645 000 2502	OSC,CRYSTAL 4.433619MHZ			
	610 239 3347	CRYSTAL OSCILLATOR			
X701	645 000 6692	OSC,CERAMIC 8.00MHZ			
	645 002 1039	OSC,CERAMIC 8.00MHZ			
OUT OF CIRCUIT BOARD					
PICTURE TUBE					
⚠Q901	414 006 5509	CRT A34JFQ40X(W)			
	414 006 5608	CRT A34JFQ40X(W)			
COIL					
⚠L901	645 004 2669	COIL,DEGAUSSING			
	610 225 3542	DEGAUSSING COIL			
	610 225 3566	DEGAUSSING COIL			
⚠L902	610 235 1750	DEFLECTION YOKE			
	610 224 5783	DEFLECTION YOKE			
MISCELLANEOUS					
SP901	610 055 6614	SPEAKER			
	610 215 6089	SPEAKER			
⚠W901	645 000 2458	CORD,POWER			
W902	610 024 2081	GROUNDING CONNECTOR			
	610 024 2159	GROUNDING CONNECTOR			

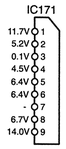
IC351	
	VOLT.
1	15.2V
2	-
3	12.0V

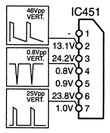
IC352	
	VOLT.
1	11.2V
2	-
3	8.1V

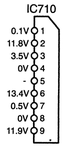












Q601		
	VOLT.	WAVEFORM
B	2.1V	2.8Vp-p HORIZ.
C	102V	70Vp-p HORIZ.
E	1.6V	

Q611		
	VOLT.	WAVEFORM
B	2.3V	3.4Vp-p HORIZ.
C	102V	77Vp-p HORIZ.
E	1.8V	

Q621		
	VOLT.	WAVEFORM
B	2.2V	3.2Vp-p HORIZ.
C	100V	77Vp-p HORIZ.
E	1.7V	

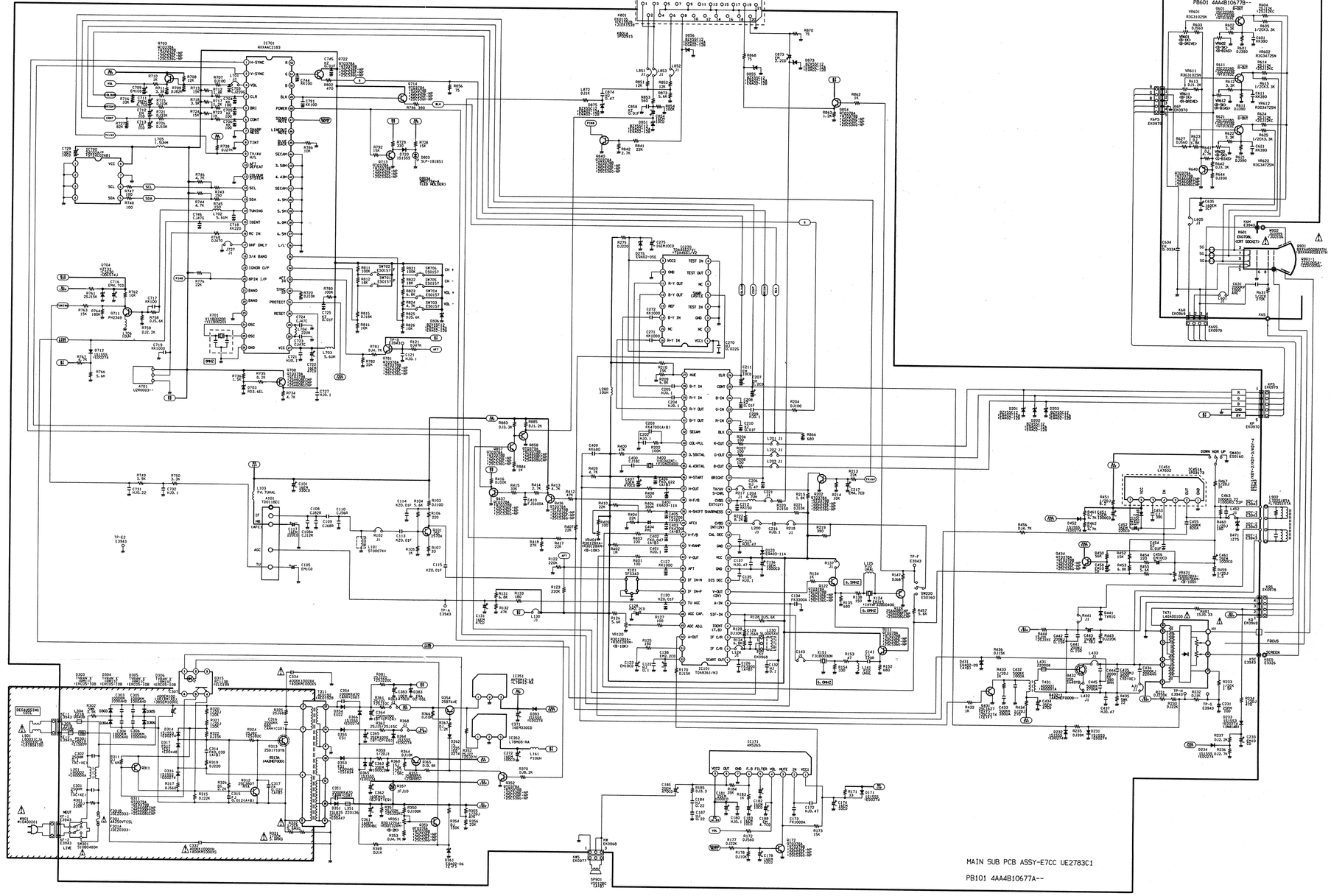
Q312		
	VOLT.	WAVEFORM
B	-2.7V	6.6Vp-p
C	-1.5V	5.0Vp-p
E	-	

Q313		
	VOLT.	WAVEFORM
B	-1.5V	5.0Vp-p
C	-	660Vp-p
E	-	

Q431		
	VOLT.	WAVEFORM
B	0.3V	1.0Vp-p HORIZ.
C	14.9V	60Vp-p HORIZ.
E	-	

Q432		
	VOLT.	WAVEFORM
B	2.3V	12Vp-p HORIZ.
C	-	1100Vp-p HORIZ.
E	-	

TP-F	WAVEFORM
	2Vp-p HORIZ.



Q101	
	VOLT.
E	0.6V
C	6.3V
B	1.4V

Q111	
	VOLT.
E	2.5V
C	8.0V
B	3.1V

Q122	
	VOLT.
E	2.5V
C	8.0V
B	3.1V

Q124	
	VOLT.
E	3.2V
C	8.1V
B	2.5V

Q172	
	VOLT.
E	-
C	0.02V
B	0.6V

Q202	
	VOLT.
E	-
C	0.1V
B	0.7V

Q311	
	VOLT.
E	11.8V
C	-2.7V
B	12.0V

Q351	
	VOLT.
E	25.1V
C	25.0V
B	24.4V

Q352	
	VOLT.
E	-
C	0.1V
B	0.7V

Q353	
	VOLT.
E	6.2V
C	36.1V
B	6.8V

Q354	
	VOLT.
E	15.3V
C	15.2V
B	14.5V

Q434	
	VOLT.
E	0V
C	5.0V
B	0V

Q436	
	VOLT.
E	-
C	6.2V
B	0.02V

Q437	
	VOLT.
E	-
C	0.04V
B	0.6V

Q703	
	VOLT.
E	4.5V
C	12.0V
B	2.6V

Q708	
	VOLT.
E	5.3V
C	5.3V
B	4.6V

Q711	
	VOLT.
E	0.01V
C	10.2V
B	0.4V

Q713	
	VOLT.
E	-
C	0.1V
B	0.7V

Q714	
	VOLT.
E	0.2V
C	5.3V
B	0.02V

Q722	
	VOLT.
E	0V
C	5.3V
B	0.02V

Q781	
	VOLT.
E	3.5V
C	8.0V
B	4.0V

Q840	
	VOLT.
E	-
C	5.3V
B	0V

Q854	
	VOLT.
E	3.3V
C	8.0V
B	3.9V

Q857	
	VOLT.
E	2.3V
C	4.3V
B	2.9V

Q858	
	VOLT.
E	5.0V
C	-
B	0.7V

Q640	
	VOLT.
E	1.4V
C	-
B	0.7V

Product safety notice:
Product safety should be considered when a component replacement is made in any area of a receiver. Components indicated by a mark ⚠ in this circuit diagram show components whose values have special significance to product safety. It is particularly recommended that only parts specified on the part service manual be used for components replacement pointed out by the mark.

The service Precaution:
The area enclosed by this line (⌒⌒⌒) is directly connected with AC mains voltage. When servicing the area, connect an isolating transformer between TV receiver and AC line to eliminate hazard of electric shock.

Circuit diagram notes :
1. All resistance values are in ohms, K=1,000, M=1,000,000.
2. All resistance rated wattages are 1/6W unless otherwise noted.
3. Excepting electrolytic capacitors, all capacitance values of less than 1 are expressed in μF and more than 1 are pF.
4. All capacitance rated voltages are 50V unless otherwise noted.
5. All inductance values are in μH.
6. Voltage readings taken with taken with a "VTVM" are from point indicated chassis ground. Voltage readings taken by using a colour bar signal are with all controls at normal position. Some voltages may vary with signal strength.
7. Waveforms were taken with colour bar and controls adjusted for normal picture. Waveforms were taken by using a wide band oscilloscope and a low capacity probe.
8. This circuit diagram covers a basic or representative chassis only. There may be some components or partial circuit differences between the actual chassis and the circuit diagram.
9. Expression of capacitance and resistance in circuit diagram.

Capacitance (Example)
1000 C M 2000 D
- Characteristic
- Capacitance value (220pF)
- Allowable error (±20%) — J=±5%, K=±10%, M=±20%
- Kind (Ceramic) — T,A,U,D:Electrolytic, C,K,B:Ceramic, F:Mylar film, M,N:Polypropylene, Z:Metalized paper
- Rated voltage(1,000V)

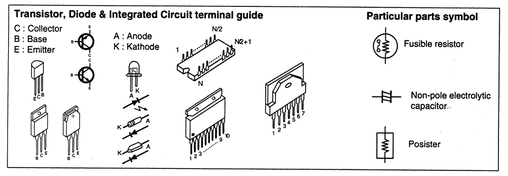
Resistance (Example)
1/2 N J 1.2
- Resistance value (1.2Ω)
- Allowable error (±5%)
- Kind (M.carbon) — D:Carbon, N:Metalized carbon, S:Oxide metalized, W:Wire wounding, C:Solid
- Rated wattage(1/2W)

10. ■ Diode 1S1555 may be replaced with 1S2473, 1S2076 or DS472 unless otherwise noted.
■ Transistor 2SC536(Q,R,S), 2SC1740(Q,R,S), 2SC945A(Q,R,P) or 2SC1815(G,O,Y) unless otherwise noted.
■ Transistor 2SA608(E,F) may be replaced with 2SA933(Q,R), 2SA564(QA,RA), or 2SA1015(O,Y) unless otherwise noted.

Transistor, Diode & Integrated Circuit terminal guide

C : Collector
B : Base
E : Emitter

A : Anode
K : Kathode



Particular parts symbol

Fusible resistor

Non-pole electrolytic capacitor

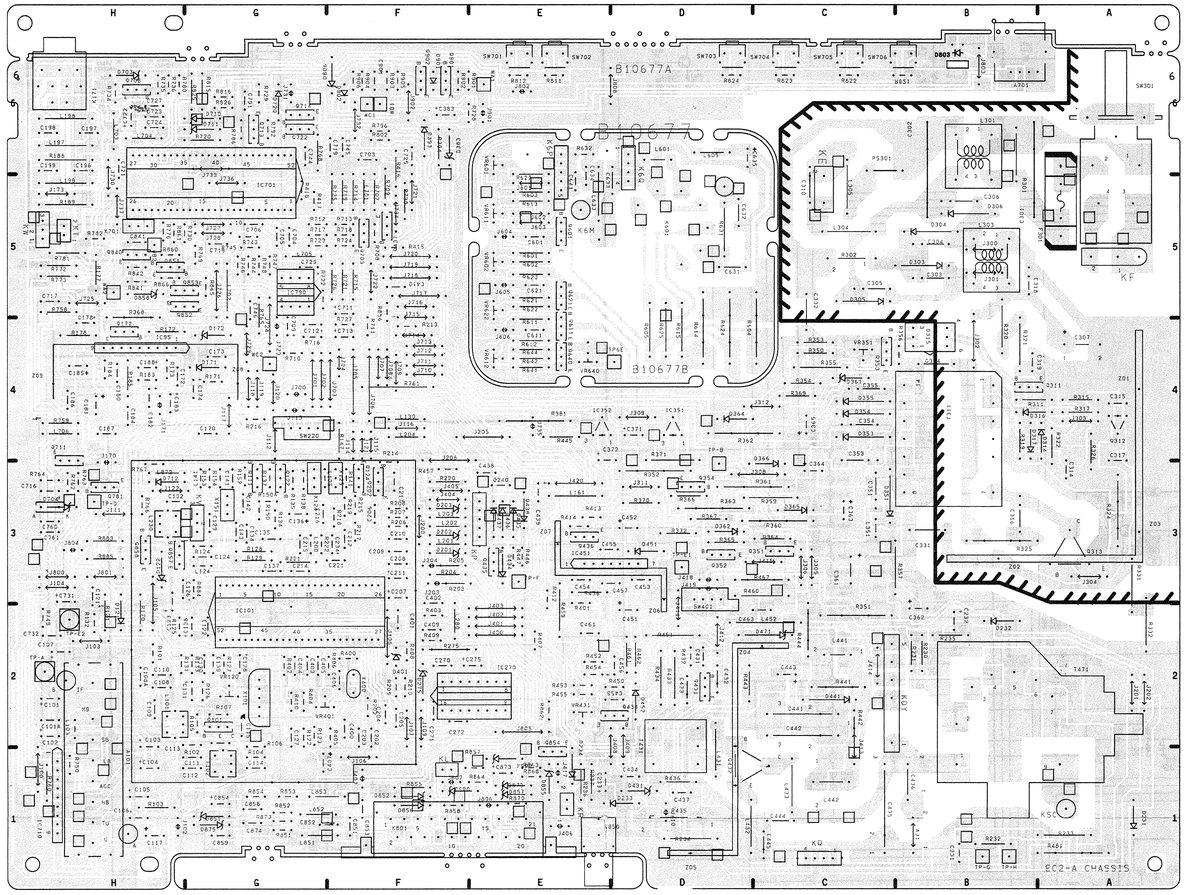
Posister

SANYO	COLOUR TELEVISION EC2-A CHASSIS SERIES
SERVICE REF.NO.	CB1443 C14EA80B-00

Part No. SKP20015 E7CC

329. JOHN

MAIN BOARD CIRCUIT SIDE



SERVICE CONTROL ADJUSTMENT

B1 POWER SUPPLY ADJUSTMENT
1. Set VR351 to be mechanical center before pressing the main switch.
2. Tune the receiver to PAL circular pattern.
3. Set brightness and contrast controls to normal.
4. Connect digital V-meter to R351.
5. By using VR351, adjust voltage to 130 ± 0.5 V.

TU-AFT ADJUSTMENT
1. Tune the receiver to the clearest station.
2. By using L230, adjust AFT to obtain the best picture.

AGC ADJUSTMENT
NOTE: *Do not attempt this adjustment with weak signal.*
1. Tune the receiver to the clearest station.
2. Set AGC VR(VR120) in direction which causes snow noise to appear, then in the opposite direction until snow noise just disappears.

GREY SCALE ADJUSTMENT

[SCREEN VR ADJUSTMENT]
1. Tune the receiver to black and white pattern.
2. Set brightness control to display centre and contrast control to normal.
3. Set SW220 to "SERVICE" position.
4. Set VR601and VR611 to be mechanical center.
5. Turn VR602, VR612 and VR622 fully counter-clockwise.
6. Set screen VR for one colour to be just visible.

[BIAS VR ADJUSTMENT]
7. By using VR602, VR612 or VR622, adjust line to be white.
8. Set SW220 to "NORMAL" position.

[DRIVE VR ADJUSTMENT]
9. By using VR601 and VR611, adjust white balance.

HIGH VOLTAGE & WIDTH CONFIRM
[HIGH VOLTAGE CONFIRM]
1. Tune the receiver to PAL circular pattern.
2. Set brightness and contrast controls to normal.
3. Connect digital V-meter to test point (+) "TP-H" and (-) "TP-G", and high voltage meter to CRT anode.
4. Confirm high voltage to be 21.0 ± 1 KV at beam current 0.7 ± 0.05, and less than 25.0 KV at 0 beam current.

[H-WIDTH CONFIRM]
5. If H-width is too wide or narrow, connect or disconnect AJ1.
6. Reconfirm high voltage.

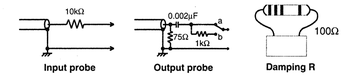
H-CENTER ADJUSTMENT
1. Tune the receiver to PAL circular pattern.
2. Adjust H-center by using VR401.

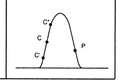
V-SIZE ADJUSTMENT
1. Tune the receiver to PAL circular pattern.
2. Adjust V-size by using VR431.

FOCUS ADJUSTMENT
By using FOCUS VR, adjust focus control for well scanning lines.

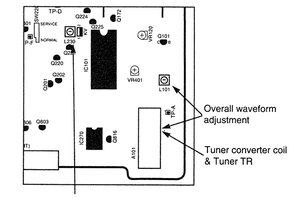
CIRCUIT ALIGNMENT

VIF ALIGNMENT

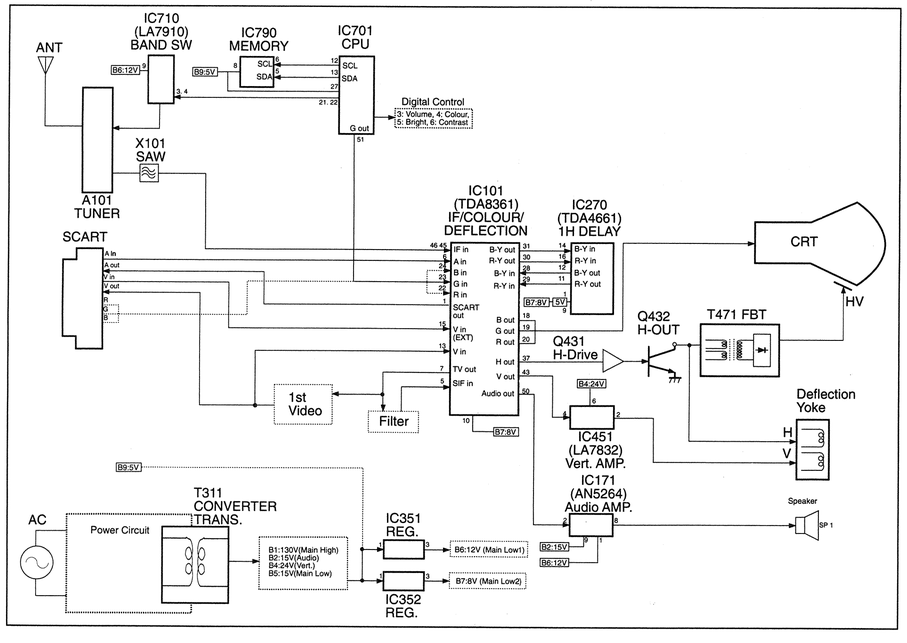


		DETECTOR ADJUSTMENT	OVERALL WAVEFORM
SETTING	DC 15V AGC voltage Output probe Input probe Tuning voltage Band Damping R System SW Sweep ATT	R352 IC101-48 p Tuner TR (Side b) TP-F Tuner TU UB ---------- I 25	R352 IC101-48 p Tuner TR (Side b) TP-F Tuner TU UB KV-1 & KV-2 I 25
Adjustment		By using L230, adjust "P" to be maximum amplitude.	By using Tuner converter coil and L101, make the marker positions to P= 48 ± 10% C= 49 ± 10%
VIF waveform			

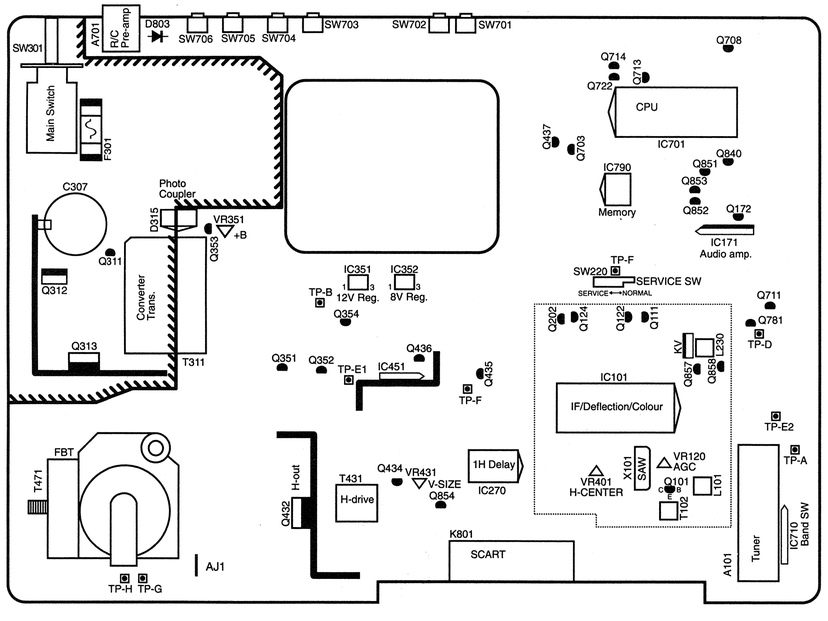
MAIN BOARD



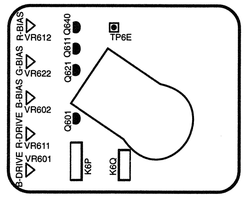
BLOCK DIAGRAM



COMPONENT LOCATION MAIN BOARD



COMPONENT LOCATION CRT BOARD



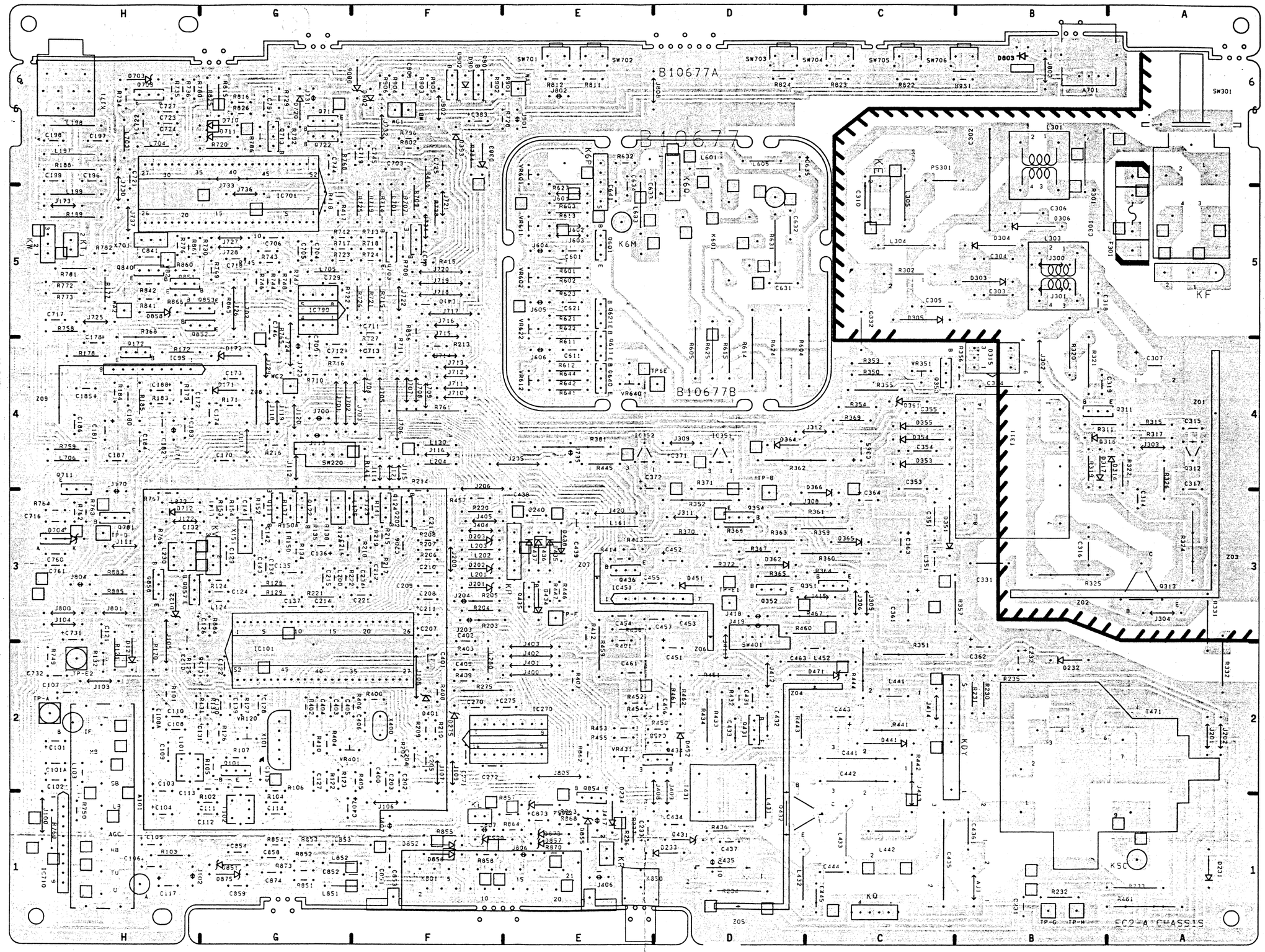
SANYO

COLOUR TELEVISION
TELEVISIONE A COLORI

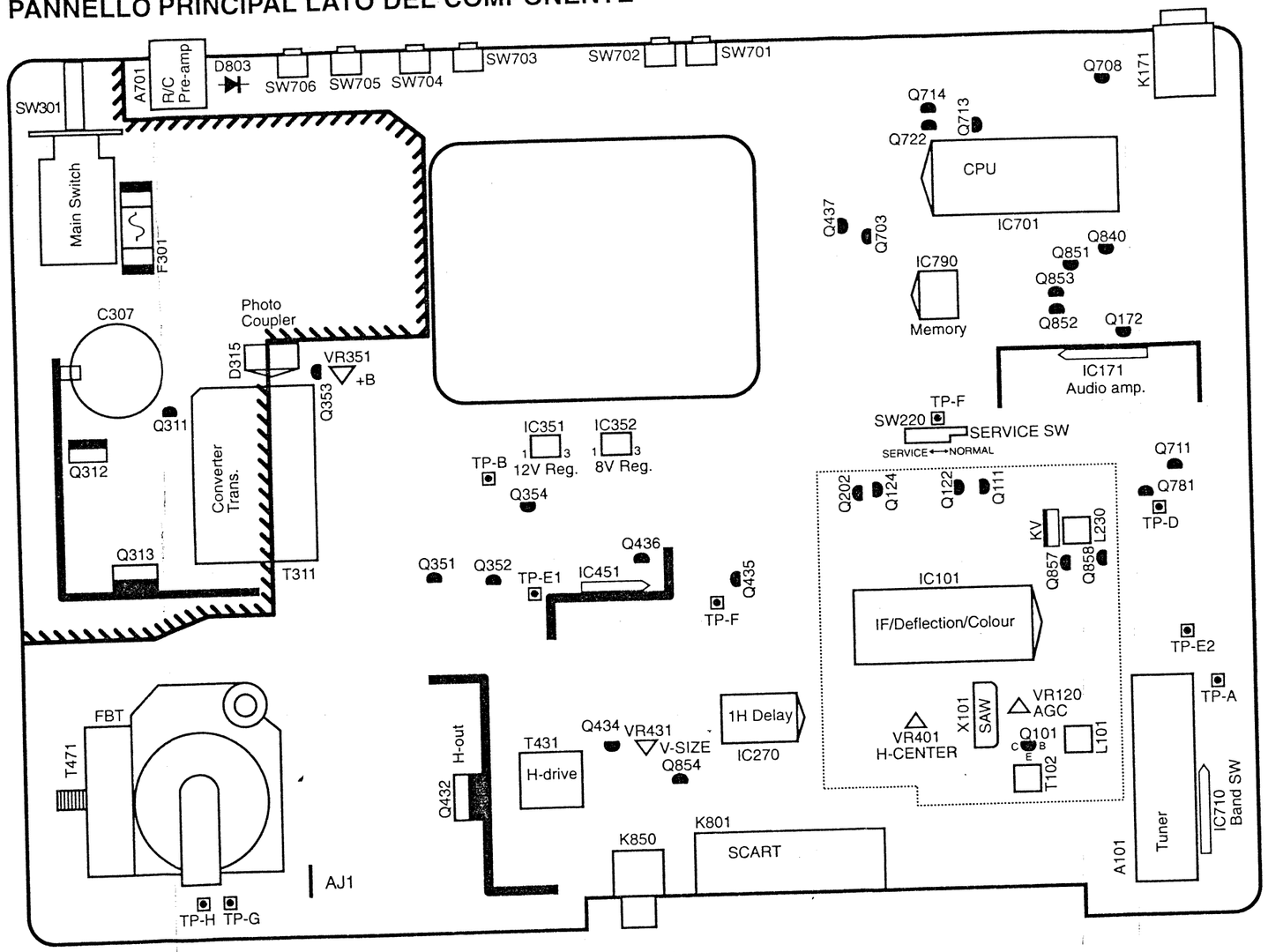
EC2-A CHASSIS SERIES

MODEL C14EA80HD

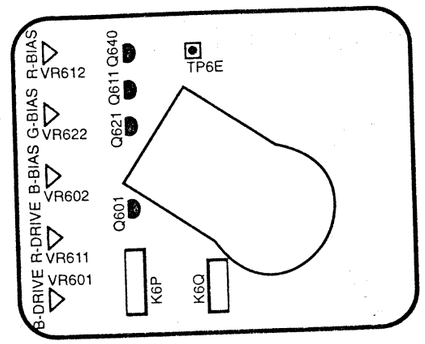
MAIN BOARD CIRCUIT SIDE
PANNELLO PRINCIPAL LATO DEL CIRCUITO



COMPONENT LOCATION MAIN BOARD
PANNELLO PRINCIPAL LATO DEL COMPONENTE



COMPONENT LOCATION CRT BOARD
PANNELLO CINESCOPIO LATO DEL COMPONENTE

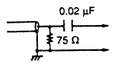


REGOLAZIONE VOLTAGGIO B

1. Regolare il VR351 in modo che sia il centro meccanico prima di premere l'interruttore principale.
2. Sintonizzare il ricevitore sul monoscopio PAL.
3. Regolare in posizione normale i controlli di luminosità e contrasto.
4. collegare il contatore V digitale al punto test "R351".
5. Usando il VR351, regolare il voltaggio a 130 ± 0.5V.

REGOLAZIONE TU-AFT

1. Sintonizzare il ricevitore sulla stazione più chiara (38.9MHz/80%).
2. Collegare attacco uscita al punto test "Sintonizzatore TR".
3. Collegare l'oscilloscopio al punto test "TP-D".
4. Usando il L230, regolare il voltaggio a 3.5±0.2V_{CD}.



SONDA DI USCITA

REGOLAZIONE TU-AGC

1. Sintonizzare il ricevitore su una stazione chiara.
2. Girare VR120 completamente nel senso anti-orario, poi lentamente nel senso orario fino a che sparisca il rumore di neve.

REGOLAZIONE SCALA GRIGIO

[REGOLAZIONE SCHERMO VR]

1. Sintonizzare il ricevitore sulla banda nera e bianca.
2. Regolare in posizione normale i controlli di luminosità e contrasto.
3. Portare l'interruttore SERVICE(SW220) del quadro principale sulla posizione di servizio.
4. Regolare VR601, VR611 in modo che si trovino sul centro meccanico.
5. Girare completamente VR602, VR612, VR622 in senso antiorario.
6. Regolare lo schermo VR in modo che sia appena visibile un colore.

[REGOLAZIONE BIAS VR]

7. Usando due VR602, VR612, VR622 regolare la linea in modo che rimanga bianca.
8. Portare l'interruttore SERVICE(SW220) sulla posizione di normale.

[REGOLAZIONE DRIVE VR]

9. Usando VR601, VR611 regolare il bilanciamento del bianco.

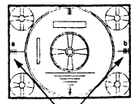
CONFERMA DI ALTO VOLTAGGIO E LARGHEZZA H

[CONFERMA DI ALTO VOLTAGGIO]

1. Sintonizzare il ricevitore sul monoscopio PAL.
2. Regolare in posizione normale i controlli di luminosità e contrasto.
3. Collegare il contatore V digitare ai punti test (+) "TP-H" e (-) "TP-G", e il contatore di alto voltaggio all'anode CRT.
4. Confermare l'alto voltaggio essere 21.0 ± 1kV alla corrente del fascio 0.7 ± 0.05V, e meno di 23.0kV alla corrente fascio 0.

[CONFERMA LARGHEZZA H]

3. Tagliare AJ1 in caso che la somma del segnale di larghezza sia più di 5 (a+b).
4. Riconfermare l'alto voltaggio se taglia via AJ1.



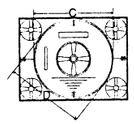
SEGNALE DI LARGHEZZA

REGOLAZIONE CENTRO H

1. Sintnizzare il ricevitore sul monoscopio PAL.
2. Usando VR401, regolare il centro H in modo da essere 0 ± 3mm.

REGOLAZIONE DIMENSIONE V

1. Sintnizzare il ricevitore sul monoscopio PAL.
2. Usando il VR431, regolare la larghezza verticale in modo che sia $C=D^{+0/-4}$ mm, o la somma del segnale di larghezza in modo che sia 4 ± 1.

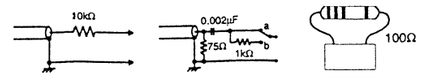


REGOLAZIONE DEL FUOCO

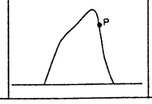
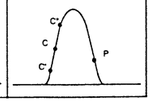
Regolare il controlle del fuoco situato sul lato destro dello chassis, per la migliore definizione del contromi.

ALLINEAMENTO DEL CIRCUITO

ALLINEAMENTO VIF



SONDA D'INGRESSO SONDA DI USCITA R DISMORZAMENTO

		REGOLAZIONE DETETTORE	FORMA D'ONDA GLOBALE
MESSA A PUNTO	CD 15V Volaggio AGC Attacco uscita Attacco entrata Voltaggio sintonia Banda Smorzamento R Sistema SW Deflessione ATT	IC351-1 IC101-48 p Sintonizzatore TP (Lato b) TP-F Sintonizzatore TU Libertà ---------- B/G 30	IC351-1 IC101-48 p Sintonizzatore TP (Side b) TP-F Sintonizzatore TU Libertà KV-1 & KV-2 B/G 30
Regolazione		Usando il L230, regolare "P" al massimo di ampiezza.	Usando la bobina convertitore sintonizzatore e il L101, fare le posizioni segnale a P=35 ± 10% C=35 ± 10%
Forma d'onda VIF			

SERVICE CONTROL ADJUSTMENT

B1 POWER SUPPLY ADJUSTMENT

1. Set VR351 to be mechanical centre before pressing the main switch.
2. Tune the receiver to PAL circular pattern.
3. Set brightness and contrast controls to normal.
4. Connect digital V-meter to R351.
5. By using VR351, adjust voltage to 130 ± 0.5 V.

TU-AFT ADJUSTMENT

1. Tune the receiver to the clearest station.
2. By using L230, adjust AFT to obtain the best picture.

AGC ADJUSTMENT

NOTE: ***Do not attempt this adjustment with weak signal.***

1. Tune the receiver to the clearest station.
2. Set AGC VR(VR120) in direction which causes snow noise to appear, then in the opposite direction until snow noise just disappears.

GREY SCALE ADJUSTMENT

[SCREEN VR ADJUSTMENT]

1. Tune the receiver to black and white pattern.
2. Set brightness control to display centre and contrast control to normal.
3. Set SW220 to "SERVICE" position.
4. Set VR601and VR611 to be mechanical centre.
5. Turn VR602, VR612 and VR622 fully counter-clockwise.
6. Set screen VR for one colour to be just visible.

[BIAS VR ADJUSTMENT]

7. By using VR602, VR612 or VR622, adjust line to be white.
8. Set SW220 to "NORMAL" position.

[DRIVE VR ADJUSTMENT]

9. By using VR601 and VR611, adjust white balance.

HIGH VOLTAGE & WIDTH CONFIRM

[HIGH VOLTAGE CONFIRM]

1. Tune the receiver to PAL circular pattern.
2. Set brightness and contrast controls to normal.
3. Connect digital V-meter to test point (+) "TP-H" and (-) "TP-G", and high voltage meter to CRT anode.
4. Confirm high voltage to be 21.0 ± 1 KV at beam current 0.7 ± 0.05, and less than 25.0 KV at 0 beam current.

[H-WIDTH CONFIRM]

5. If H-width is too wide or narrow, connect or disconnect AJ1.
6. Reconfirm high voltage.

H-CENTRE ADJUSTMENT

1. Tune the receiver to PAL circular pattern.
2. Adjust H-centre by using VR401.

V-SIZE ADJUSTMENT

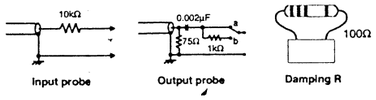
1. Tune the receiver to PAL circular pattern.
2. Adjust V-size by using VR431.

FOCUS ADJUSTMENT

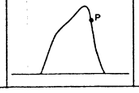
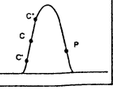
By using FOCUS VR, adjust focus control for well scanning lines.

CIRCUIT ALIGNMENT

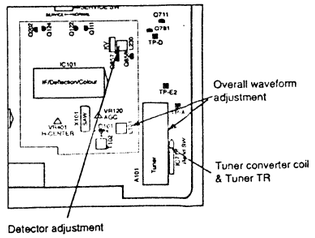
VIF ALIGNMENT



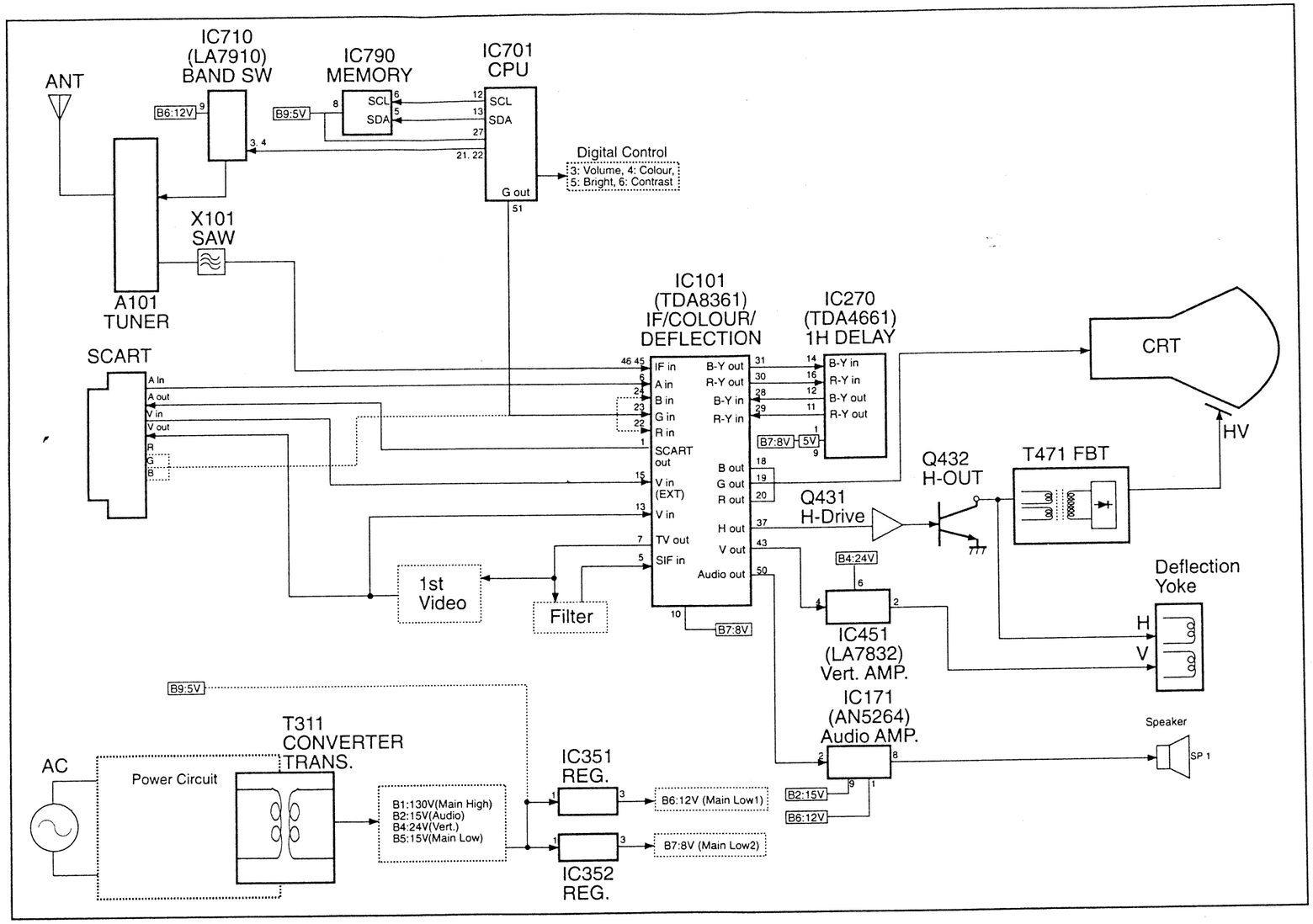
Input probe Output probe Damping R

		DETECTOR ADJUSTMENT	OVERALL WAVEFORM
SETTING	DC 15V AGC voltage Output probe Input probe Tuning voltage Band Damping R System SW Sweep ATT	IC351-1 IC101-48 p Tuner TP (Side b) TP-F Tuner TU FREE ---------- B/G 30	IC351-1 IC101-48 p Tuner TP (Side b) TP-F Tuner TU FREE KV-1 & KV-2 B/G 30
Adjustment		By using L230, adjust "P" to be maximum amplitude.	By using Tuner converter coil and L101, make the marker positions to P=35 ± 10% C=35 ± 10%
VIF waveform			

MAIN BOARD

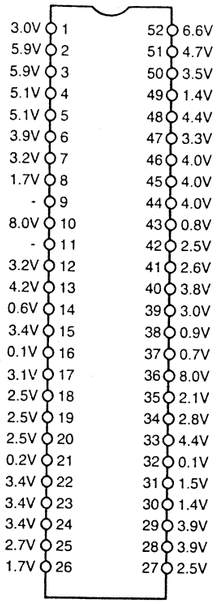


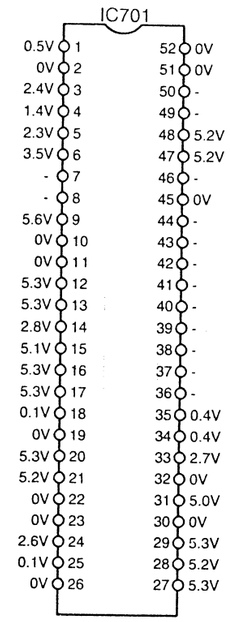
BLOCK DIAGRAM

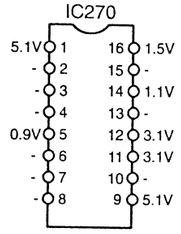


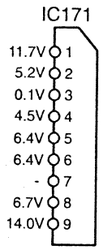
IC351	
	VOLT.
1	15.2V
2	-
3	12.0V

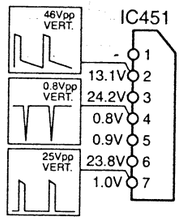
IC352	
	VOLT.
1	11.2V
2	-
3	8.1V

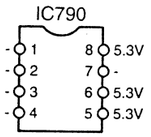


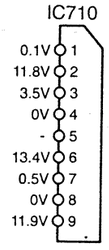












Q601		
	VOLT.	WAVEFORM
B	2.1V	2.8Vp-p HORIZ.
C	102V	70Vp-p HORIZ.
E	1.6V	

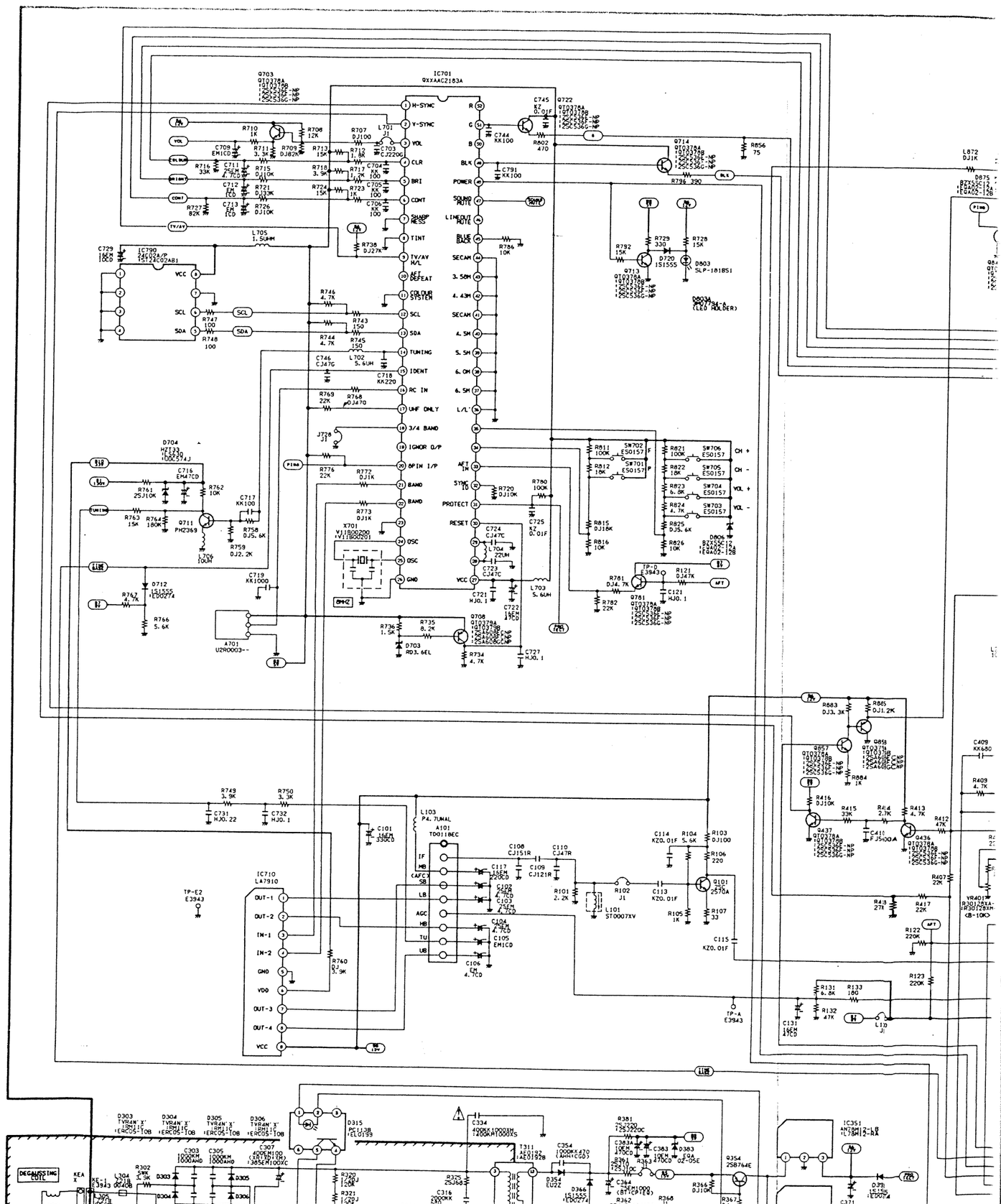
Q611		
	VOLT.	WAVEFORM
B	2.3V	3.4Vp-p HORIZ.
C	102V	77Vp-p HORIZ.
E	1.8V	

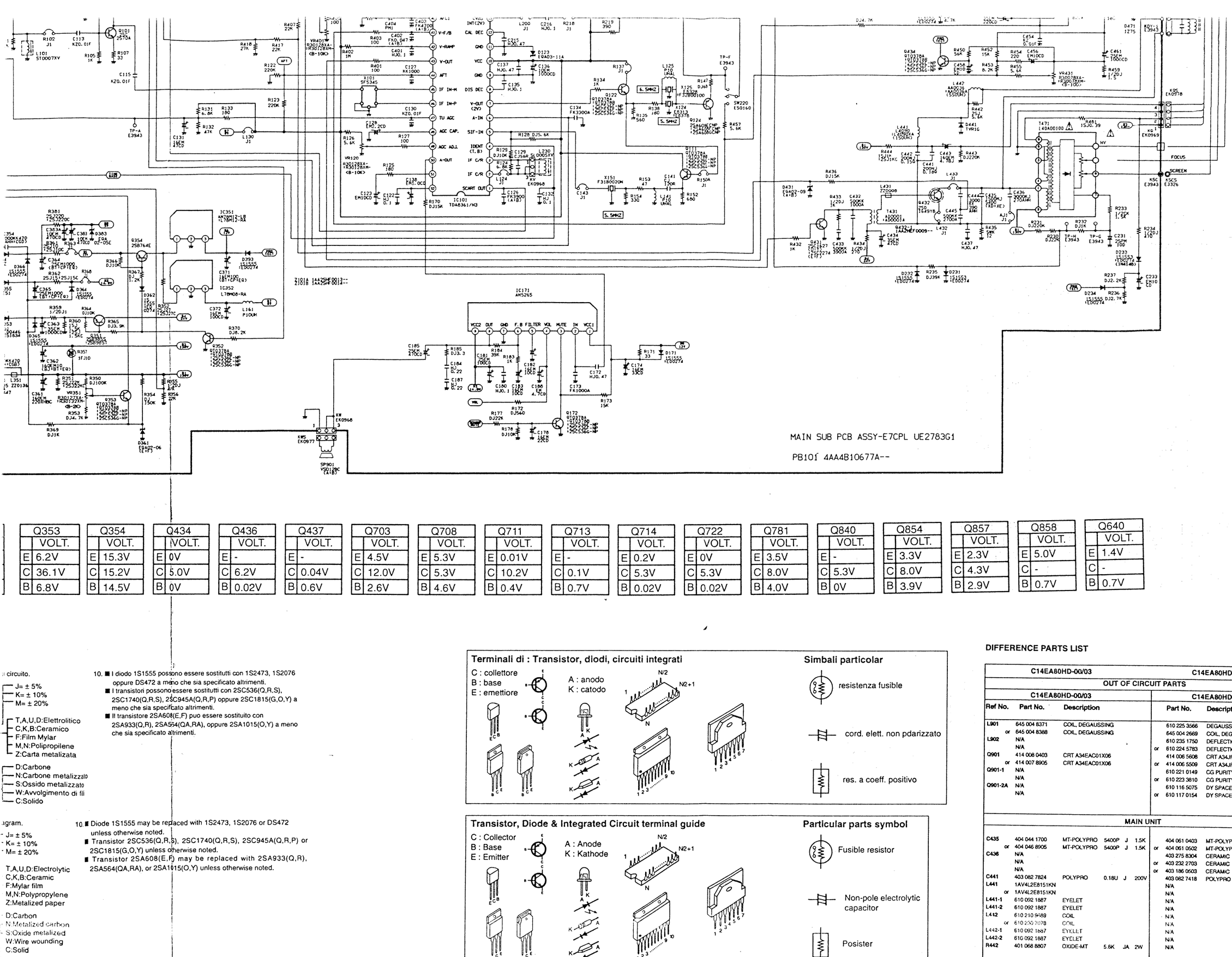
Q621		
	VOLT.	WAVEFORM
B	2.2V	3.2Vp-p HORIZ.
C	100V	77Vp-p HORIZ.
E	1.7V	

Q312		
	VOLT.	WAVEFORM
B	-2.7V	6.6Vp-p
C	-1.5V	5.0Vp-p
E	-	

Q313		
	VOLT.	WAVEFORM
B	-1.5V	5.0Vp-p
C	-	660Vp-p
E	-	

Q431		
	VOLT.	WAVEFORM
B	0.3V	1.0Vp-p HORIZ.
C	14.9V	60Vp-p HORIZ.
E	-	





Q353	
	VOLT.
E	6.2V
C	36.1V
B	6.8V

Q354	
	VOLT.
E	15.3V
C	15.2V
B	14.5V

Q434	
	VOLT.
E	0V
C	5.0V
B	0V

Q436	
	VOLT.
E	-
C	6.2V
B	0.02V

Q437	
	VOLT.
E	-
C	0.04V
B	0.6V

Q703	
	VOLT.
E	4.5V
C	12.0V
B	2.6V

Q708	
	VOLT.
E	5.3V
C	5.3V
B	4.6V

Q711	
	VOLT.
E	0.01V
C	10.2V
B	0.4V

Q713	
	VOLT.
E	-
C	0.1V
B	0.7V

Q714	
	VOLT.
E	0.2V
C	5.3V
B	0.02V

Q722	
	VOLT.
E	0V
C	5.3V
B	0.02V

Q781	
	VOLT.
E	3.5V
C	8.0V
B	4.0V

Q840	
	VOLT.
E	-
C	5.3V
B	0V

Q854	
	VOLT.
E	3.3V
C	8.0V
B	3.9V

Q857	
	VOLT.
E	2.3V
C	4.3V
B	2.9V

Q858	
	VOLT.
E	5.0V
C	-
B	0.7V

Q640	
	VOLT.
E	1.4V
C	-
B	0.7V

circuito.

- J= ± 5%
- K= ± 10%
- M= ± 20%

- T,A,U,D:Elettrolitico
- C,K,B:Ceramico
- F:Film Mylar
- M,N:Polipropilene
- Z:Carta metalizzata

- D:Carbone
- N:Carbone metallizzato
- S:Ossido metallizzato
- W:Avvolgimento di filo
- C:Solido

10. ■ I diodo 1S1555 possono essere sostitutti con 1S2473, 1S2076 oppure DS472 a meno che sia specificato altrimenti.
■ I transistori possono essere sostitutti con 2SC536(Q,R,S), 2SC1740(Q,R,S), 2SC945A(Q,R,P) oppure 2SC1815(G,O,Y) a meno che sia specificato altrimenti.
■ Il transistore 2SA608(E,F) puo essere sostituito con 2SA933(Q,R), 2SA564(QA,RA), oppure 2SA1015(O,Y) a meno che sia specificato altrimenti.

agram.

- J= ± 5%
- K= ± 10%
- M= ± 20%

T,A,U,D:Electrolytic
C,K,B:Ceramic
F:Mylar film
M,N:Polypropylene
Z:Metalized paper

- D:Carbon
- N:Metalized carbon
- S:Oxide metalized
- W:Wire wounding
- C:Solid

10. ■ Diode 1S1555 may be replaced with 1S2473, 1S2076 or DS472 unless otherwise noted.
■ Transistor 2SC536(Q,R,S), 2SC1740(Q,R,S), 2SC945A(Q,R,P) or 2SC1815(G,O,Y) unless otherwise noted.
■ Transistor 2SA608(E,F) may be replaced with 2SA933(Q,R), 2SA564(QA,RA), or 2SA1015(O,Y) unless otherwise noted.

Terminali di : Transistor, diodi, circuiti integrati

C : collettore
B : base
E : emettitore

A : anodo
K : catodo

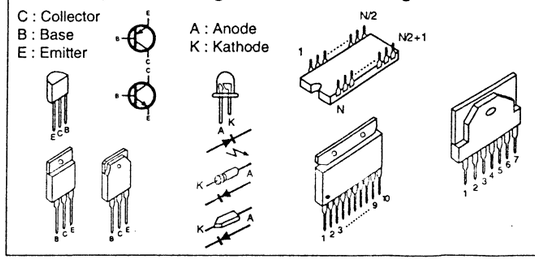
Simbali particolar

- resistenza fusible
- cord. elett. non pdarizzato
- res. a coeff. positivo

Transistor, Diode & Integrated Circuit terminal guide

C : Collector
B : Base
E : Emitter

A : Anode
K : Kathode



Particular parts symbol

- Fusible resistor
- Non-pole electrolytic capacitor
- Posister

DIFFERENCE PARTS LIST

C14EA80HD-00/03						C14EA80HD-01/04					
OUT OF CIRCUIT PARTS											
C14EA80HD-00/03						C14EA80HD-01/04					
Ref No.	Part No.	Description				Part No.	Description				
L901	645 004 8371	COIL, DEGAUSSING				610 225 3566	DEGAUSSING COIL				
or	645 004 8388	COIL, DEGAUSSING				645 004 2669	COIL, DEGAUSSING				
L902	N/A					610 235 1750	DEFLECTION YOKE				
	N/A					or 610 224 5783	DEFLECTION YOKE				
Q901	414 008 0403	CRT A34EAC01X06				414 006 5608	CRT A34JFQ40X(W)				
or	414 007 8905	CRT A34EAC01X06				or 414 006 5509	CRT A34JFQ40X(W)				
Q901-1	N/A					610 221 0149	CG PURITY MAGNET				
	N/A					or 610 223 3810	CG PURITY MAGNET				
Q901-2A	N/A					610 116 5075	DY SPACER-B2ME				
	N/A					or 610 117 0154	DY SPACER-D4AK				
MAIN UNIT											
C435	404 044 1700	MT-POLYPRO	5400P	J	1.5K	404 061 0403	MT-POLYPRO	4500P	J	1.5K	
or	404 046 8905	MT-POLYPRO	5400P	J	1.5K	or 404 061 0502	MT-POLYPRO	4500P	J	1.5K	
C436	N/A					403 275 8304	CERAMIC	220P	K	3K	
	N/A					or 403 232 2703	CERAMIC	220P	K	3K	
	N/A					or 403 186 0503	CERAMIC	220P	K	3K	
C441	403 082 7824	POLYPRO	0.18U	J	200V	403 082 7418	POLYPRO	0.15U	J	200V	
L441	1AV4L2E8151KN					N/A					
or	1AV4L2E8151KN					N/A					
L441-1	610 092 1887	EYELET				N/A					
L441-2	610 092 1887	EYELET				N/A					
L442	610 210 9489	COIL				N/A					
or	610 250 7078	COIL				N/A					
L442-1	610 092 1887	EYELET				N/A					
L442-2	610 092 1887	EYELET				N/A					
R442	401 068 8807	OXIDE-MT	5.6K	JA	2W	N/A					

CRT SUB PCB ASSY-E7CD UE2783A2

PB601 4AA4B10677B--

IC101 TDA8361/N3

IC171 AN5265

IC351 LA7851

IC352 L78M08-RA

IC451 LA7832

IC451A IPQ3173

Q901 B51XAA00355XPH B51XAA00360XPH

Q9021A4AB0915

Q9031A4AB0915

Q9041A4AB0915

Q9051A4AB0915

Q9061A4AB0915

Q9071A4AB0915

Q9081A4AB0915

Q9091A4AB0915

Q9101A4AB0915

Q9111A4AB0915

Q9121A4AB0915

Q9131A4AB0915

Q9141A4AB0915

Q9151A4AB0915

Q9161A4AB0915

Q9171A4AB0915

Q9181A4AB0915

Q9191A4AB0915

Q9201A4AB0915

Q9211A4AB0915

Q9221A4AB0915

Q9231A4AB0915

Q9241A4AB0915

Q9251A4AB0915

Q9261A4AB0915

Q9271A4AB0915

Q9281A4AB0915

Q9291A4AB0915

Q9301A4AB0915

Q9311A4AB0915

Q9321A4AB0915

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Q601	VOLT.	WAVEFORM
B	2.1V	2.8Vp-p HORIZ.
C	102V	70Vp-p HORIZ.
E	1.6V	

Q611	VOLT.	WAVEFORM
B	2.3V	3.4Vp-p HORIZ.
C	102V	77Vp-p HORIZ.
E	1.8V	

Q621	VOLT.	WAVEFORM
B	2.2V	3.2Vp-p HORIZ.
C	100V	77Vp-p HORIZ.
E	1.7V	

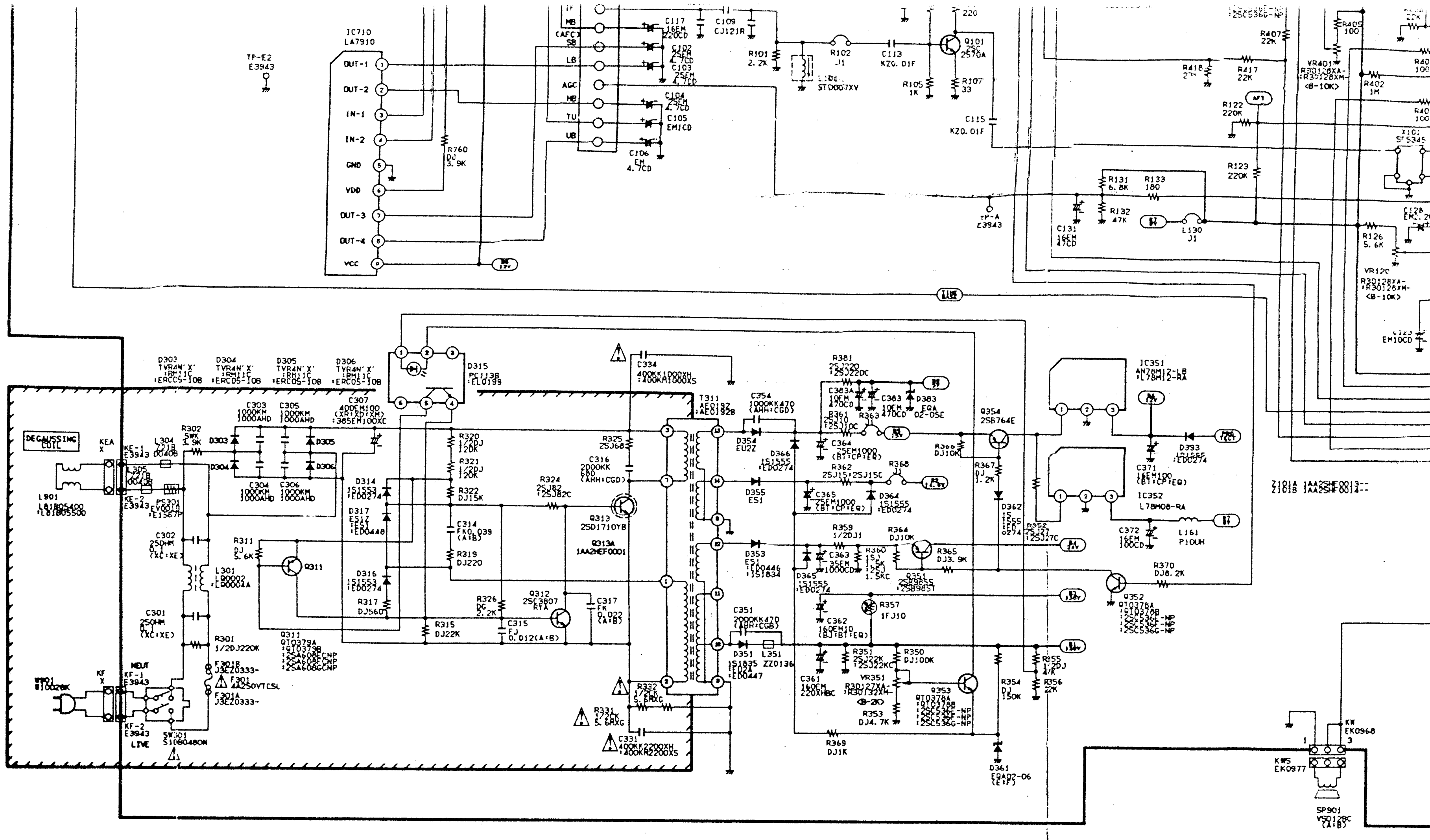
Q312	VOLT.	WAVEFORM
B	-2.7V	6.6Vp-p
C	-1.5V	5.0Vp-p
E	-	

Q313	VOLT.	WAVEFORM
B	-1.5V	5.0Vp-p
C	-	660Vp-p
E	-	

Q431	VOLT.	WAVEFORM
B	0.3V	1.0Vp-p HORIZ.
C	14.9V	60Vp-p HORIZ.
E	-	

Q432	VOLT.	WAVEFORM
B	2.3V	12Vp-p HORIZ.
C	-	1100Vp-p HORIZ.
E	-	

TP-F	WAVEFORM
	2Vp-p HORIZ.



Q101	VOLT.
E	0.6V
C	6.3V
B	1.4V

Q111	VOLT.
E	2.5V
C	8.0V
B	3.1V

Q122	VOLT.
E	2.5V
C	8.0V
B	3.1V

Q124	VOLT.
E	3.2V
C	8.1V
B	2.5V

Q172	VOLT.
E	-
C	0.02V
B	0.6V

Q202	VOLT.
E	-
C	0.1V
B	0.7V

Q311	VOLT.
E	11.8V
C	-2.7V
B	12.0V

Q351	VOLT.
E	25.1V
C	25.0V
B	24.4V

Q352	VOLT.
E	-
C	0.1V
B	0.7V

Q353	VOLT.
E	6.2V
C	36.1V
B	6.8V

Q354	VOLT.
E	15.3V
C	15.2V
B	14.5V

Q434	VOLT.
E	0V
C	5.0V
B	0V

Q436	VOLT.
E	-
C	6.2V
B	0.02V

Q437	VOLT.
E	-
C	0.04V
B	0.6V

Q70	VO
E	4.5
C	12.
B	2.6

Product safety notice:
Product safety should be considered when a component replacement is made in any area of a receiver. Components indicated by a mark ⚠ in this circuit diagram show components whose values have special significance to product safety. It is particularly recommended that only parts specified on the part service manual be used for components replacement pointed out by the mark.

NOTIZIE SULLA SICUREZZA DI FUNZIONAMENTO
Ogni sotituzione di componenti va fatta tenendo conto della sicurezza di funzionamento. I componenti indicati sollo schema con il simbolo ⚠ hanno particolare importanza per il sicuro funzionamento del TV.
I suddetti componenti devono essere sostituti esclusivamente con quelli indicati nell'elenco.

SANYO

COLOUR TELEVISION
TELEVISIONE A COLORI

EC2-A CHASSIS SERIES

MODEL **C14EA80HD**

Part No. 1AA6P2P0286-B E7CPL

The service Precaution:
The area enclosed by this line (⟂⟂⟂) is directly connected with AC mains voltage. When servicing the area, connect an isolating transformer between TV receiver and AC line to eliminate hazard of electric shock.

PRECAUZIONE DI SERVIZIO
L'area inclusa in questa linea (⟂⟂⟂) è collegata direttamente con la tensione della rete CA quando si serve l'area collegare un trasformatore isolante tra il ricevitore TV e la linea CA per eliminare il pericolo di scossa elettrica.

Note sul diagramma di circuito :

1. Tutte i valori di resistenza sono in ohm, K=1,000, M=1,000,000.
2. Tutte le resistenze nominali watt sono di 1/6 a meno che sia specificato altrimenti.
3. Eccetto per i condensatori elettrolitici, tutti i valori di capacitanza di meno di sono espressi in µF, e di piu di 1 sono in pF. I varoli di capacitanza elettrolitici sono in µF.
4. Tutti volt di capacitanza nominali sono di 50V a meno cha sia indicato altrimenti.
5. Tutti valori di inductanza sono in µH.
6. I valori letti del voltaggio presi con un "VTVM" proven gono dal punto indicato sulla massa del chassis, i valori di voltaggio presi usando un segnale di barre colore sono con tutti i controlli alle loro posizioni normali ed il commutatore AFC in posizione "OFF". Il voltaggio puo variare con l'intensita del segnale.
7. Le forme di onda furono prese con il segnale di barre colore e i controlli regolati oppure le forme di onda di immagine normale furono prese usando un oscillatore a larga banda ed una sonda bassa capasità.
8. Rispetto a quando indicato su questo schema possono essere state introdotte delle modifiche.

9. Espressione di capacitanza resistanze nel diagramma di circuito.

Capacitanza (Esempio)
1000 C M 2000 D
- D — Caratteristici
- 2000 — Valore capacitanza (220pF)
- M — Errore di tolleranza (±20%): J= ± 5%, K= ± 10%, M= ± 20%
- C — Tipo (Ceramico): T,A,U,D:Elettrolitico; C,K,B:Ceramico; F:Film Mylar; M,N:Polipropilene; Z:Carta metalizata
- 1000 — Nominali volt(1,000V)

Resistanze (Esempio)
1/2 N J 1.2
- 1.2 — Valore resistanza (1.2Ω)
- J — Errore di tolleranza (±5%)
- N — Tipo (carbone metallizato): D:Carbone; N:Carbone metalizzato; S:Ossido metalizzato; W:Avvolgimento di fili; C:Solido
- 1/2 — Nominali watt(1/2W)

10. ■ I diodo 1S1555 possono essere sostitutti con 1S2473, 1S2076 oppure DS472 a meno che sia specificato altrimenti.
■ I transistori possono essere sostitutti con 2SC536(Q,R,S), 2SC1740(Q,R,S), 2SC945A(Q,R,P) oppure 2SC1815(G,O,Y) a meno che sia specificato altrimenti.
■ Il transistore 2SA608(E,F) puo essere sostituito con 2SA933(Q,R), 2SA564(QA,RA), oppure 2SA1015(O,Y) a meno che sia specificato altrimenti.

Circuit diagram notes :

1. All resistance values are in ohms, K=1,000, M=1,000,000.
2. All resistance rated wattages are 1/6W unless otherwise noted.
3. Excepting electrolytic capacitors, all capacitance values of less than 1 are expressed in µF and more than 1 are pF.
4. All capacitance rated voltages are 50V unless otherwise noted.
5. All inductance values are in µH.
6. Voltage readings taken with taken with a "VTVM" are from point indicated chassis ground. Voltage readings taken by using a colour bar signal are with all controls at normal position. Some voltages may vary with signal strength.
7. Waveforms were taken with colour bar and controls adjusted for normal picture. Waveforms were taken by using a wide band oscilloscope and a low capacity probe.
8. This circuit diagram covers a basic or representative chassis only. There may be some components or partial circuit differences between the actual chassis and the circuit diagram.

9. Expression of capacitance and resistance in circuit diagram.

Capacitance (Example)
1000 C M 2000 D
- D — Characteristic
- 2000 — Capacitance value (220pF)
- M — Allowable error (±20%): J= ± 5%, K= ± 10%, M= ± 20%
- C — Kind (Ceramic): T,A,U,D:Electrolytic; C,K,B:Ceramic; F:Mylar film; M,N:Polypropylene; Z:Metalized paper
- 1000 — Rated voltage(1,000V)

Resistance (Example)
1/2 N J 1.2
- 1.2 — Resistance value (1.2Ω)
- J — Allowable error (±5%)
- N — Kind (M.carbon): D:Carbon; N:Metalized carbon; S:Oxide metalized; W:Wire wounding; C:Solid
- 1/2 — Rated wattage(1/2W)

10. ■ Diode 1S1555 may be replaced with 1S2473, 1S2076 or DS472 unless otherwise noted.
■ Transistor 2SC536(Q,R,S), 2SC1740(Q,R,S), 2SC945A(Q,R,P) or 2SC1815(G,O,Y) unless otherwise noted.
■ Transistor 2SA608(E,F) may be replaced with 2SA933(Q,R), 2SA564(QA,RA), or 2SA1015(O,Y) unless otherwise noted.